REFERENCE LIBRARY

OF THE

STATE NORMAL SCHOOL

WHITEWATER, WISCONSIN

No. 13093

Bought Bindery 185 1925

Students of the Normal School are allowed to draw the books for use at their rooms on the following conditions:

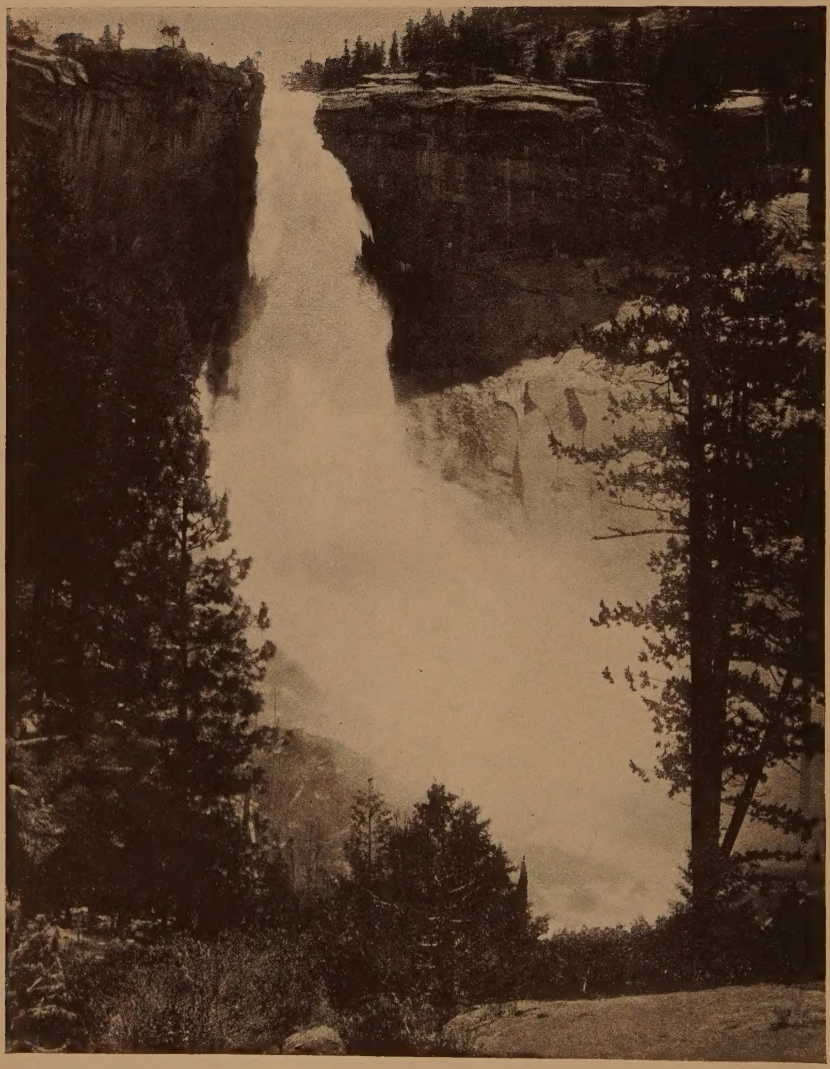
1. No book must be taken from the library until it has been properly charged to the student drawing it.

2. Bound magazines, most Reference books and Reserved books may be taken from the library at 4 p. m. and must be returned at 8 a. m. the following day.

3. All other books may be kept for two weeks.

Ticket

OUR AMERICAN WONDERLANDS



NEVADA FALLS, YOSEMITE VALLEY

Our American Wonderlands

by

George Wharton James
Author of
"The Grand Canyon of Arizona," "The Wonders of the Colorado Desert," Etc., Etc.

Illustrated from Photographs

F
595
J26

Chicago
A. C. McClurg & Co.
1915

13093

Copyright
Edith E. Farnsworth
1915

Published November, 1915

W. F. HALL PRINTING COMPANY, CHICAGO

FOREWORD

Few Americans know their own land even in a cursory way. The Alps are not to be known by railway travelers, nor can the Sierras be studied "from a car-window." With its two thousand years or more of culture and material progress there are many parts of Europe that can be seen only by those who are willing to leave the beaten tracks. Many of the trails of the United States are still fresh and newly-trodden, yet the wonders and marvels they reach are far beyond what the Old World has to offer. In everything, save the products of man's industry, genius, and energy, this country affords far more to see than does Europe. Our "Wonderlands" are more startling, more varied, more alluring, more attractive.

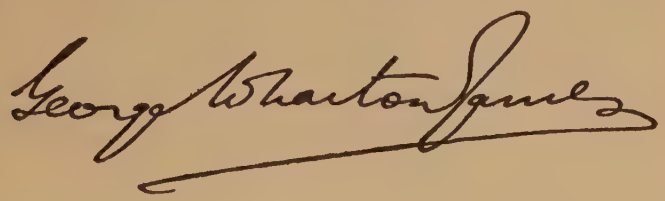
Hence, while the war now raging between the great civilized nations of Europe is to be deplored, it will serve one good purpose, at least, if it leads Americans to a keener, truer patriotism, manifested in a desire to see and better know their own country. He is no true American—from my standpoint—who will seize every opportunity to cross the Atlantic before he has crossed the prairies, the Rockies, the sage-brush deserts, and the Sierras of his own land. Once let Americans know and exalt the glories of American scenery as they do those of European scenery, and the United States will begin to take its proper and appointed place among the countries of the world as the possessor of many gifts and most wonderful allurements.

In the following pages I have sought, briefly and vividly, without entering into too much detail, to give the reader living glimpses of what America offers of antiquarian, scenic, geologic, and ethnologic interest. The cliff dwellings of Colorado and Arizona are just as fascinating as the castles of the Rhine, when one comprehends their story; the Hopis, Havasupais, Apaches, and Navahos are more picturesque than the Swiss, Irish, Servian, or Russian peasants, and their social and religious ceremonies far more wonderful and fascinating; the Natural Bridges of Utah, the Mammoth Cave of Kentucky, the Grand Canyon, the Petrified Forest, the Canyon de Chelly, Havasu Canyon, the Yosemite Valley, the Yellowstone and a hundred other scenic glories of our Western World far surpass in variety and marvel anything Europe has to offer.

The Colorado and Mohave Deserts, the High Sierras, the Channel Islands of California, Lake Tahoe and its glacial surroundings, are equally fascinating as their counterparts in the Old World, and the glaciers of the Alps are not more wonderful and alluring than those of the Glacier National Park of Montana, and the Cascade and other western ranges.

It by no means reflects credit on our citizens that, when they are questioned in Europe "I suppose, of course, you know the Yosemite, the Petrified Forest, the Grand Canyon, the Hopi Villages, Meteorite Mountain, the Roosevelt Dam, the Yellowstone Park, Glacier National Park, the Mammoth Cave, the Great Bridges of Utah, the Cliff Dwellings, Canyon de Chelly, etc., etc.," they are compelled to answer, "No! I have seen none of them—or, at best, only the ones that are reached easiest by railroad."

To excite interest in these wonderlands of our own country is my avowed purpose, with the deliberate intent of making the slogan SEE AMERICA FIRST a potent one in active and daily operation in the minds of all intelligent Americans. To increase travel in these directions will be my reward, for thus I know I shall add largely to the measure of satisfaction enjoyed by my fellow-citizens in the increased knowledge of their own great and wonderful land.



Pasadena, California, 1915.

CONTENTS

CHAPTER		PAGE
I	The Grand Canyon of Arizona	1
II	Old Taos and the Flagellantes	11
III	The Prehistoric Cliff- and Cave-Dwellings of the Southwest	20
IV	To Betatakin and Kitsiel	38
V	The Cliff-Dwellings of the Mesa Verde . .	60
VI	Old Santa Fe and the Land of the Delight Makers	67
VII	Canyon de Chelly, Del Muerto and Monument Canyons, and Their Ruins	76
VIII	The Navahos and Their Remarkable Fire Dance	87
IX	The Terraced Houses of the Rio Grande .	95
X	By the Enchanted Mesa to the City of the Sky	101
XI	Over the Painted Desert to the Hopi Snake Dance	115
XII	Over the Lava Fields to the "Seven Cities of Cibola"	136
XIII	Meteorite Mountain and Sunset Crater . .	145
XIV	Over the Apache Trail to the Roosevelt Dam	150
XV	The Canyon of Cataracts, and the Havasupai Indians	158
XVI	The Petrified Forests of Arizona	167

CHAPTER		PAGE
XVII	The Lure of the Arizona Deserts	172
XVIII	The Colossal Natural Bridges of Utah . .	182
XIX	The Garden of the Gods and Monument Park	190
XX	The Old Franciscan Missions of New Mexico, Arizona, and Texas	196
XXI	The Yellowstone National Park	203
XXII	On the Roof of the Continent—The Glacier National Park, Montana	214
XXIII	Rainier National Park	221
XXIV	Crater Lake, Oregon	227
XXV	The Yosemite Valley	234
XXVI	The Big Trees of California	241
XXVII	The Lake of the Sky—Lake Tahoe . . .	249
XXVIII	The Channel Islands of California . . .	259
XXIX	The Natural Bridge of Virginia	265
XXX	The Mammoth Cave of Kentucky . . .	272
XXXI	Incomparable Niagara	283
	Index	293

ILLUSTRATIONS

	PAGE
Nevada Falls	*Frontispiece*
The Grand Canyon, plateau view	2
Northwest from Hopi Point	3
Hermit Camp	4
Jacob's Ladder	5
Grand Canyon from Hotel El Tovar	8
Hermit's Rest	9
Taos pueblo	12
Old Spanish fort near Taos	12
Church procession at Taos	13
Penitente "morada" (church) with crosses	13
Taos pueblo, showing "kiva"	14
Ruins of old church at Taos	15
The San Francisco Mountains	34
Cliff-dwellings near Flagstaff	35
Over the Arizona desert to Betatakin and Kitsiel	46
The Arizona desert	46
Cliff city of Betatakin	47
Another view of Betatakin	47
Two views of Kitsiel	58
Cliff-dwellings, Mesa Verde National Park	62
The Balcony House	63
Ruins of Tyuonyi	70
Ruins of Puyé	71
Cave-dwelling ruins at Puyé	71
Mummy Cave	78
The White House	79
Canyon de Chelly Monument	86
Canyon de Chelly, looking east	87
Navaho blanket weaving	88
A Navaho summer hogan	89
Navaho fire dance	92
Corral in which fire dance is held	92
Navaho types	93
Indian pueblo of Santa Clara	98

PAGE

San Ildefonso 99
Pueblo funeral procession 99
Indian pueblo of Laguna 104
Street in the pueblo of Acoma 104
The Enchanted Mesa 105
Drifted sand, Acoma 105
The Rock of Acoma 112
Wall of defense 113
Hopi pueblo of Walpi. 118
Archway in Hopi pueblo 118
Hopi pueblo of Oraibi 119
Moki snake dance 119
Antelope priests at Walpi 122
The trail to Walpi 123
In the "kiva" 128
Lava "necks," or "heads" 138
Lava "neck" 138
Plaza in the pueblo of Zuni 139
Zuni Indians making bead necklaces 139
Meteorite Mountain 146
Mesa overlooking lava fields 146
Roosevelt Dam 150
On the road to Roosevelt Dam 151
On the road to Roosevelt Dam 152
Arizona desert near Phoenix 153
Near Fish Creek Hill 153
The Havasu 160
Mooney Falls 161
Bridal Veil Falls 162
The Wallapai trail to Havasu Canyon 163
Pagatocoba's hawa 163
The Petrified Bridge 168
The Petrified Forest 169
The Petrified Forest 169
The desert country 174
The desert country 174
The San Pedro Valley 175
Nonnezoshie Natural Bridge 184
Edwin Natural Bridge 185
Augusta Natural Bridge 185
Indian picture writing 186
Indian picture writing 186

PAGE

Rock formations 187
Rock formations 187
Gateway to the Garden of the Gods 190
Cathedral Spires 191
In Monument Park 194
In Monument Park 194
San Xavier Mission 198
San Jose de Tumacacori Mission 198
Espada Mission 199
San Jose Mission 199
The Alamo 200
Doorway, San Jose Mission 201
Dome Geyser 204
Punch Bowl Spring 204
Pulpit Terrace 205
Jupiter Terrace 205
Tower Falls 206
Old Faithful Geyser 207
Grotto Geyser 210
Cleopatra Terrace 210
Silver Cord Cascades 211
Canyon at Tower Falls 212
Grand Canyon and Great Fall of the Yellowstone . . . 213
Climbing Blackfeet Glacier 216
Mount Jackson 217
Waterfall, Glacier National Park 218
Blackfeet Glacier 218
Iceberg Lake 219
Lake McDermott 219
Entrance to Rainier National Park 222
"Snout" of Nisqually Glacier 223
Near view of Nisqually's "Snout" 224
Mirror Lake 225
Crater Lake 232
Crater Lake, Wizard Island 232
Crater Lake 233
Entrance to Yosemite Valley 234
El Capitan 235
Overhanging Rock 236
The Yosemite Falls 236
Cathedral Spires 236
High Sierra in Yosemite National Park 237

PAGE

Looking down into the Yosemite from the rear of Half Dome 238
North Dome 239
At the foot of a Sequoia gigantea 240
The Grizzly Giant 241
A cluster of Sequoias in Muir Woods 246
Comparison of one of California's big trees with a church 247
Carnelian Bay 250
Cave Rock 254
Looking north from Cave Rock 255
Rubicon Point 255
Coast line near Avalon 260
Arch Rock 261
The Natural Bridge of Virginia 266
Icicle formation 272
Standing Rocks 272
Pillars of Elephantis 273
Elephants' Heads 276
The Throne 277
Bottomless Pit 277
The American Fall 284
The Horseshoe Fall 284
Whirlpool Rapids 285
Prospect Park in winter 285

OUR AMERICAN WONDERLANDS

OUR AMERICAN WONDERLANDS

CHAPTER I

THE GRAND CANYON OF ARIZONA

AS THERE is but one Niagara, one Yosemite, one Lake Tahoe, one Yellowstone, so there is but one Grand Canyon. While the name has often been applied to lesser gorges, it is a sacrilege that should not be tolerated as an act of lese majesty against the one supreme gorge of the known world. Supreme, indeed, it is, in size—width, depth, and length—in infinite variety of sculptured forms and their dimensions, in the gamut of color revealed, in the geological strata exposed, in the problems involved, and in the vastness of the great river which, working through the patient ages, has been the chief instrument of its manufacture, and now angrily, sullenly, noisily, sometimes quietly, at others thunderingly and blusteringly, dashes on its way to the far-away open desert, and later to the open sea.

There are writers who have sought to compare the Grand Canyon with other objects of natural scenery; but this is only to aid the imagination of those who yet have the pleasure before them of making its acquaintance. You cannot compare things of such differences. John Muir once wrote illuminatingly on this subject. He said:

It is impossible to conceive what the Canyon is, or what impression it makes, from the descriptions or pictures, however

good. Naturally it is untellable even to those who have seen something perhaps a little like it on a small scale in this same plateau region. One's most extravagant expectations are indefinitely surpassed, though one expects much from what is said of it as "the biggest chasm on earth."

So big is it that all other big things — Yosemite, the Yellowstone, the Pyramids, Chicago — all would be lost if tumbled into it.

Naturally enough, illustrations as to size are sought for among other canyons like or unlike it, with the common result of worse confounding confusion. The prudent keep silent. It was once said that the "Grand Canyon could put a dozen Yosemites in its vest pocket.

The justly famous Grand Canyon of the Yellowstone is, like that of the Colorado, gorgeously colored and abruptly countersunk in a plateau, and both are mainly the work of water. But the Colorado's Canyon is more than a thousand times larger, and as a score or two new buildings of ordinary size would not change appreciably the general view of a great city, so hundreds of Yellowstones might be crowded in the sides of the Colorado Canyon without noticeably augmenting its size or the richness of its sculpture. But it is not true that the great Yosemite rocks would be thus lost or hidden. Nothing of their kind in the world, so far as I know, rivals El Capitan and Tissiack (Half Dome), much less dwarfs or in any way belittles them. None of the sandstone or limestone precipices of the Canyon that I have seen or heard of approaches in smooth, flawless strength and grandeur the granite face of El Capitan or the Tenaya side of Cloud's Rest. These colossal cliffs, types of permanence, are about three thousand and six hundred feet high; those of the Canyon that are sheer are about half as high, and are types of fleeting change; while glorious-domed Tissiack, noblest of mountain buildings, far from being overshadowed or lost in this rosy, spring canyon company, would draw every eye, and, in serene majesty, "aboon them a'," she would take her place—castle, temple, palace, or tower.

Every feature of nature's big face is beautiful—height, hollow, wrinkle, furrow, and line—and this is the main master

Copyright by Fred Harvey

THE GRAND CANYON

PLATEAU VIEW THIRTEEN HUNDRED FEET ABOVE THE COLORADO

Copyright by Fred Harvey

NORTHWEST FROM HOPI POINT

furrow of its kind on our continent, incomparably greater and more impressive than any other yet discovered, or likely to be discovered, now that all the great rivers have been traced to their heads.*

There are several features of the canyon that immediately force themelves upon the attention of the observer. The first is the stupendous vastness of the chasm into which one gazes. Few people have any standard with which to compare it. The ordinary canyons, or ravines, into which one may have gazed are so puny and insignificant as not to count in the tremendous impression now produced. As one reads the account of emotions experienced in gazing into other depths—as, for instance, Porte Crayon's description of the thrilling sensations experienced by his sisters at the Natural Bridge of Virginia, given in Chapter XXIX, one realizes how utterly incompetent words are to suggest what one feels in the presence of this really sublime abyss. All the superlatives of the language have been exhausted on objects so insignificant as to be unobservable were they alongside of this great Canyon.

Then, too, the vastness of this deep inferno is entirely different from the vastness of a valley that one gazes into from a mountain height. The actual depth may be as great in the latter case as the five thousand feet descent into the Canyon, but the valley is not shut in, is not a wild desolation of highly colored and picturesquely sculptured rocks. The two depths are entirely alike. Hence analysis shows that the effect of vast depth of wide extent is enhanced by the fact of the uniqueness of the scene. It is different in this

* *The Grand Canyon of the Colorado,* in Century Magazine, Nov., 1902.

regard from anything ever seen, and being on so stupendous a scale it overpowers, impresses, dominates to the full capacity of the human mind.

Another striking feature is the bizarre and unusual sculpturing and fashioning that the walls and rocks of the canyon have assumed. We think of the Garden of the Gods, Monument Park, the Bad Lands, and the wonderful Land of the Standing Rocks, as marvels of Nature's unique sculpturing, yet they are insignificant when compared with the towers, temples, minarets, domes, walls, buttresses, gargoyles, and other fantastic and strange creations of the Canyon. As an unknown writer has graphically said:

> Hundreds of these mighty structures, miles in length and thousands of feet in height, rear their majestic forms out of the abyss, displaying their richly molded plinths and friezes, thrusting out their gables, wing walls, buttresses, and pilasters, and recessed with alcoves and panels.

Nowhere in the world is such wild, grand, marvelous, unusual architecture as here, and on such a sublime scale as to dwarf into insignificance man's most ambitious attempts, as St. Peter's, Cologne, Milan, St. Paul's, St. Sophia, the Kremlin, and the like. Nor should one think that there is no harmony in this architecture. Each stratum of rock has its own characteristic forms of erosion, and these adapt themselves remarkably as architectural details of marvelous quality to the vast structures which corrosion and erosion have formed.

The colors, too, are so different from what one has ever before experienced. Here are no soft, tender, gentle, pastoral landscapes, of refined greens and alluring tones of brown and yellow. No, indeed! Flaming reds, chocolates,

Copyright by Fred Harvey

HERMIT CAMP

THIRTY-FIVE HUNDRED FEET BELOW THE RIM

Copyright by Fred Harvey

JACOB'S LADDER

ON BRIGHT ANGEL TRAIL

carmines, crimsons, resplendent yellows, oranges, saffrons; dazzling blues, greens, and creams; glaring patches and streaks of white; and thunderous splotches of black, make up this scene. Here Nature was in her most riotous mood, and spilled colors broadcast from her paint pots with lavish hands. Bizarre, grotesque, startling, at first sight, study and knowledge are required to understand and enjoy them. The blaze and glory of them are absolutely startling. Ten thousand rainbows of solid rock are broken up and tossed higgledy-piggledy into this chasm. Walls are made of the same materials, a rioting chaos of color—this is what it seems at first sight. The eye cannot focalize anything; the vastness confuses; the colors dazzle; the varied forms of the rocky masses bewilder.

Were this effect to persist, to continue indefinitely, the Grand Canyon would not please; it would repel by its first impressions. But in spite of this striking forcefulness, this bizarre uniqueness, this grotesque personality, there is something that attracts, that demands further investigation, that forbids the eyes to turn away. Then, slowly at first, soon more rapidly, the forms of the walls and domes, the towers and colonnades, assume distinct reality, individual personality. The colors resolve themselves into harmonious relationship, the chaos disappears and a very definite, organized cosmos takes its place. An hour, two hours, three, four, pass, and the visitor is still gazing, now drinking in eagerly an ever-varying panorama of form and color. The march of the sun makes constant change; the clouds float up from the everywhere into the here; atmospheric and electric effects are produced that tone down, soften, change, transform the scenes below, and every

change is more wonderful and fascinating than the one that preceded it.

Nothing that I know of in the thousands of the pages that have been written on the Grand Canyon so fully brings out these facts as the following written by Major Clarence E. Dutton, the poet-scientist of the West. He says:

The Grand Canyon of the Colorado is a great innovation in modern ideas of scenery, and in our conceptions of the grandeur, beauty, and power of Nature, as with all great innovations, it is not to be comprehended in a day or a week, nor even in a month. It must be dwelt upon and studied, and the study must comprise the slow acquisition of the meaning and spirit of that marvelous scenery which characterizes the Plateau Country, and of which the great chasm is the superlative manifestation. The study and slow mastery of the influences of that class of scenery and its full appreciation is a special culture, requiring time, patience, and long familiarity for its consummation.

The lover of Nature, whose perceptions have been trained in the Alps, in Italy, Germany, or New England, in the Appalachians or Cordilleras, in Scotland or Colorado, would enter this strange region with a shock, and dwell there for a time with a sense of oppression, and perhaps with horror. Whatsoever things he had learned to regard as beautiful and noble he would seldom or never see, and whatsoever he might see would appear to him as anything but beautiful and noble. Whatsoever might be bold and striking would at first seem only grotesque. The colors would be the very ones he had learned to shun as tawdry and bizarre. The tones and shades, modest and tender, subdued, yet rich, in which his fancy had always taken especial delight, would be the ones which are conspicuously absent.

But time would bring a gradual change. Some day he would suddenly become conscious that outlines which at first seemed harsh and trivial have grace and meaning; that forms which seemed grotesque are full of dignity; that magnitudes which had added enormity to coarseness have become replete with strength and even majesty; that colors which had been

esteemed unrefined, immodest, and glaring are as expressive, tender, changeful, and capacious of effects as any others. Great innovations, whether in art or literature, in science or in Nature, seldom take the world by storm. They must be understood before they can be estimated, and must be cultivated before they can be understood.*

Major J. W. Powell has this to say of the Grand Canyon, which presents another feature of its diverse attractiveness:

But form and color do not exhaust all the divine qualities of the Grand Canyon. It is the land of music. The river thunders in perpetual roar, swelling in floods of music when the storm gods play upon the rocks, and fading away in soft and low murmurs when the infinite blue of heaven is unveiled. With the melody of the great tide rising and falling, swelling and vanishing forever, other melodies are heard in the gorges of the lateral canyons, while the waters plunge in the rapids among the rocks or leap in great cataracts. Thus the Grand Canyon is a land of song. Mountains of music swell in the rivers, hills of music billow in the creeks, and meadows of music murmur in the rills that ripple over the rocks. Altogether it is a symphony of multitudinous melodies. All this is the music of waters. The adamant foundations of the earth have been wrought into a sublime harp upon which the clouds of heaven play with mighty tempests or with gentle showers.†

There is no difficulty in reaching the Grand Canyon nowadays. The Santa Fe main line crosses Arizona, and at Williams one changes to the branch, which, in sixty-three miles, deposits you at El Tovar, the fine Fred Harvey hotel on the "rim." At the Grand Canyon one never speaks of the "edge;" it is always the "rim," and the south rim is

* *Tertiary History of the Grand Canyon District,* Government Printing Office, Washington, 1882.

† *The Scientific Explorer, in the Grand Canyon of Arizona,* Santa Fe Passenger Dept., 1906.

the first portion to be made accessible by rail. But do not imagine you can see the Grand Canyon by rail. No! Nature cannot be treated that way, as yet, in her more magnificent and stupendous retreats. Of course, you can get one taste, one touch, one glimpse, one feel, and to some people that is enough. But if you really want to see it and know something about it, you must at least ride on its rim for a few miles, in each direction from El Tovar, and then descend one of the well-constructed trails down to the river; and, better still, steal the time to go down one trail, ride in the Canyon's heart to another, camping out by the side of the rapids of the ever-roaring river, or on the level stretches of one of the plateaus, then cross the river to the other side, ascend to the great Kaibab Plateau and ride through its superb pine forest to Point Sublime, the finest point in the whole Canyon system on the north rim, ere you return. It is not a hard trip to one used to horseback riding and camping out, but of course the "de luxe" traveler had better remain in the "flowery beds of ease" provided by Fred Harvey in connection with El Tovar.

The Grand Canyon is not a mere *object* of scenery; it is a vast drainage *system,* covering thousands of square miles of territory, and embracing within its natural area large parts of the states of Wyoming, Utah, Colorado, Nevada, Arizona, California, and even New Mexico. Few, even of the most intelligent of its casual visitors, ever get it through their heads that if all its tributary canyons were placed in a straight line they would come within less than 5,000 miles of encircling the globe. For there are nearly 3,000 miles of canyon in the upper reaches of the Colorado, and its great tributaries, or forks, the Grand and the

GRAND CANYON

FROM HOTEL EL TOVAR

Copyright by Fred Harvey

HERMIT'S REST

Green, ere the two hundred and seventeen-mile stretch, called in distinctiveness *The Grand Canyon,* is reached. And into almost every mile of this 3,000 miles, on each side, other canyons are lined, seamed, or troughed, in endless variety and never-ceasing sublimity. Canyon of Desolation, Lodore, Split Mountain, Flaming Gorge, Glen, Marble, are the names of a few of the principal ones, before reaching the entering canyon of the Little Colorado, which denotes the commencement of the Grand Canyon. This is some fifty or sixty miles east of El Tovar, and makes a great wagon and horseback ride for the adventurous who do not call the "pleasures" of camping out a "hardship."

While others had seen portions of the Grand Canyon and its tributaries, it was left for that "one-armed hero of Gettysburg," Major John Wesley Powell, first to fully describe its wonders. In 1869, 1870, and 1871 he and a band of large-souled adventurers set forth to explore its hidden mysteries and ride its waters from Green River, Wyoming, down to the Gulf; or, at least, to the Colorado Desert. The records of this trip were first given to the world in Scribner's Magazine, and later in government reports and books, and Dellenbaugh's *Romance of the Colorado River.* The story is thrilling in the extreme, and should form the theme of a lesson in American history, geography, geology, exploration, and heroism for every child in our schools—North, South, East, and West.

In my own two books, *In and Around the Grand Canyon,* and *The Grand Canyon of Arizona,* I have done my best to make its wonders, allurements, and rare marvels known. Everybody that has ever seen it knows it cannot be described, and then spends page after page in demonstrating

that it cannot. The pen of a Ruskin, Carlyle, Dante, Goethe, Milton, or Shakspere would here fail, and the canvas of a Rembrandt, a Velasquez, a Turner, merely convey a faint impression of its sublimity and majesty in architecture and color. Hence there is but one thing left for the sensible American to do — that is to visit it. And when you do, be sure to plan for plenty of time. Don't be in a hurry. It took God and his army of natural forces hundreds of thousands of years to make it. Surely you can spend a few days to look at it — wandering on its rim, peering into its depths, riding into them — and thus begin to comprehend some of the vast workings of the Almighty Mind.

CHAPTER II

OLD TAOS AND THE FLAGELLANTES

ARE you traveling to the Pacific Coast from the Middle West, North, or East? Why not go leisurely and see all you can on the way? There are a score, or more, of places that will wonderfully pay you, and none more so than Taos (not Tay-os, Teh-os, Tay-oos, or Teh-us, but, as if it rhymed with house, say Towse, in one syllable), redolent of memories of Indians, of the great Pueblo Rebellion of 1680, of the uprising of Mexicans and Indians after the country was annexed by the United States, when Governor Bent was murdered, of Kit Carson and hosts of other interesting events and personalities.

It is an old Indian pueblo in New Mexico, the northernmost of all the "pueblos," or villages, of the Indians of the Rio Grande, its several-storied, high-terraced houses familiar to many travelers. Yet most Indian villages are "close corporations," conducted with a secrecy and resentment of intrusion that Wall Street has never surpassed.

But it is not of the Indians and their religious and social life, however mysterious and fascinating, that this chapter is to deal. Three miles from the Indian village is the later-founded Spanish or Mexican town, of San Fernando de Taos. This was the home of Governor Bent, the first United States governor of New Mexico. Here lived Christopher Carson, the redoubtable Kit, guide and scout for

the pathfinder Fremont, and fully as great a man in his way as was the more refined and cultured Fremont in his. Here stood formerly one of the historic churches of New Mexico, now gone, however, in the rage for a modernism that has no appreciation for the picturesqueness of the old. Here, too, is located today a modern school of American painters — Phillips, Sharp, and the rest — seeking to catch and put on canvas before it is too late the wonderful life of the real, untouched, superstitious, natural Indian in his primitive and gloriously picturesque simplicity.

And, more fascinating than all, it is the home, the natural centre, of that strange band of religionists known as "The Penitent Brothers." Even so learned and well-informed an authority as the *Encyclopedia Britannica,* in the last edition but one, as good as asserted that the Penitentes, or Flagellantes, were practically extinct; that the last procession of Flagellantes marched in 1820 in Lisbon.

And I have had several interesting experiences as the result of my contradiction of this high authority, when, lecturing in the East, I asserted that I had been present at Penitente processions, flagellations, and crucifixions in the boundaries of the United States within the past twenty-five years.

It was Charles F. Lummis, in his *The Land of Poco Tiempo,* who first wrote and illustrated these modern and American Penitentes. At the peril of his life, or at least at the point of a revolver, he secured photographs that materially enhanced the value of his descriptions, and I myself have made photographs of the devotees, with half a dozen shotguns leveled in my direction, held in the hands of angry Mexicans, who were only prevented from firing, I imagine,

TAOS PUEBLO, NEW MEXICO

OLD SPANISH FORT NEAR TAOS

Courtesy of Denver & Rio Grande R. R.

CHURCH PROCESSION AT TAOS

Copyright by E. E. Wentworth Layton

PENITENTE "MORADA" (CHURCH) WITH CROSSES

by the ominous glint in the eyes of a fearless deputy sheriff who was my guide (and comfort as well) on the occasion.

The Penitentes of our American Southwest — as commonly they are called — are the natural or illegitimate descendants of the Third Order of St. Francis. This order was founded to give to laymen the religious advantages of the saint's rule, when circumstances rendered it impossible or inadvisable for them to accept the rigid monastic life. After the wave of self-flagellation swept over Europe as the result of the preaching and example of Cardinal Peter Damian, and St. Anthony of Padua, many fraternities introduced the practice privately among their membership. Then, in 1260, owing to the incitations of Ramèr, a monk of Perugia, great numbers of the inhabitants of this city, noble and ignoble, old and young, traversed the streets, carrying in their hands leathern thongs, with which "they drew forth blood from their tortured bodies amid sighs and tears, singing at the same time penitential psalms, and entreating the compassion of the Deity."

Then the custom spread by the example and teaching of peripatetic bands of devotees. At first they seemed to do considerable good in checking the open vice and wickedness of the people, but, in time, their exhibitions awakened the disgust of the better class of the people. Finally their flagellations grew so obnoxious to the moral sense of the church and the outside world that, in 1439, the occupant of the papal chair, Pope Clement VI, counselled and finally commanded that the order be suppressed.

Under the papacy of Gregory XI the Holy Inquisition hunted out those who still continued the practice, and the sect was believed to have disappeared entirely. Yet in 1414

it was revived openly by Conrad Schmidt, and though he and his principal followers were arrested and executed, the spirit of the order, if not its practices, still prevailed. Again, in the sixteenth century, it broke out in the south of France, and Henry III established a whipping brotherhood in Paris, and himself took an important part in the processions. These fraternities were suppressed by Henry IV, but nobody supposes for a moment that the practice was not continued, privately in the main, both in the south of France and in Italy and Spain. Yet, as far as is known, the last public procession was that already referred to as having taken place at Lisbon in 1820.

How the movement reached the Spanish settlements of Nueva Mexico, and took possession of the hearts and lives of the dwellers of the Southwest, would prove an interesting and fascinating theme for historical research. Conjecture alone, now, must fill up the gap, with the mere supposition that some devout and zealous colonists, coming from the old world of Spain, or the new world of Mexico, into the northern land of New Mexico and Arizona, possessed by Coronado, Oñate, and the later conquerors, brought the ritual of the brotherhood with them, with all its repulsive ceremonies of whippings, cross-bearing, and crucifixion.

Certain it is, that when the United States forces, under General Stephen W. Kearny, took possession of this land, it was not long before whispers began to be heard of the strange doings of these bands of superstitious fanatics. When the facts were known and brought to the attention of the Archbishop at Santa Fe, he instructed the priests of his district to suppress the order, acting under the sanction of the early papal bull. But, inexplicable though it may

Courtesy of Denver & Rio Grande R. R.

TAOS PUEBLO

SHOWING "KIVA" (SACRED CEREMONIAL CHAMBER) IN FOREGROUND

Courtesy of Denver & Rio Grande R. R.

RUINS OF OLD CHURCH AT TAOS

seem, the cruel self-scourgings and the often fatal crucifixions of the brotherhood had taken such strong hold upon their religious instinct, native superstition, or fanaticism, that when the local priests called upon them, by authority of the head of the church, to desist from their practices, they positively refused. Steadily they continued their whippings and scourgings, their penances and crucifixions, in spite of all persuasions, commands, and final interdictions. Even when the Archbishop threatened to cast them out of the church they stolidly replied: "We do not care, we are Penitentes," as if that settled the question. To be a Penitente was far more satisfactory than to be a good Catholic.

In that attitude they stand today. There is no longer open and definite enmity between themselves and the priests, but there is a tacit understanding that nothing is to be said on the subject on either side. Hence at Taos, and a score or two other Mexican settlements in the region I have mentioned, the Penitentes still hold full sway. The chief tenet of the Brotherhood seems to be a very literal interpretation of the words of the apostle:

> But rejoice, inasmuch as ye are partakers of Christ's sufferings; that, when His glory shall be revealed, ye may be glad also with exceeding joy. I Pet. 4:13.

It was at Raton, about twenty-nine years ago, that I had my first experience with this wonderful fanaticism known as "Penitentes." I had been wandering over the surrounding country with an interesting character such as one occasionally meets on the frontier — who knows everybody and whom everybody knows, and who goes where many men dare not go, and does naturally some things that most men never think of doing. So when he came to me one

morning with the information that it was Easter time, and the Penitente Brothers would be engaged in their strange ceremonials, it did not take us long to secure horses and ride down the canyon three or four miles south of town, and we were soon perched upon a hillside where we could look down upon the little Mexican *jacal* from which the penetrating tones of a flute or flageolet wailed forth most dolorous notes. Following the flute we heard the singing of one or two hymns in rude, uncultivated voices of men.

In a short time several of the Penitente Brothers emerged. Each votary had a mask or hood over his head which completely concealed his face, excluding all possibility of recognition, even by his most intimate friends. The upper part of the body was entirely nude, the feet were bare, and the only garment worn was a pair of cotton drawers. Each man held in his hand a scourge — a three-foot-long whip, with a flaplike end, having the shape and appearance of a flexible spoon. The whip was made of yucca and cactus, and the spoon-shaped end was a large leaf of the prickly pear, one of the most thorny of the cruel cactuses of the Southwest. The whole scourge was filled with the spines of cactuses, and no sooner did the procession form and move forward, each hooded figure guided by a friend, than, to our utter amazement and horror, these cruel scourges were whirled over the shoulders and brought down with resounding "thwacks" upon the bare backs of those religious fanatics.

Every third step the back was beaten, and now and again we could hear the half-smothered shriek of the self-whipper as the piercing thorns penetrated the flesh. It was not long before blood trickled down their backs; but nothing

daunted their fanatic fury. On they marched, led by the fifer playing a doleful air, accompanied by the equally dolorous singing of the Hermano Mayor, or Principal Brother.

Several hundred yards up the canyon a large cross was standing and the whipping continued each third step until this cross was reached. Then the Flagellants threw themselves face downwards, prostrate before the cross, and lay there for some time, while prayers were offered by the Hermano Mayor.

That afternoon another procession formed with five of the brothers whipping themselves. This time several women followed in the procession. It was sickening to hear the swish of those fearful cactus whips. One of the brothers, however, managed to twist and turn his body in such a way as to dodge the prickly whip, and a spectator was heard to say, "He is dodging. He is not whipping his sins out," but the cowardly member of the fraternity was speedily punished, for one of the guides seized the whip and belabored the poor victim with most sanguinary results. And all this time the *pitero* was wailing out his piercing tones, while the cracked voices of several of the men united in singing the hymn, "My God and My Redeemer."

The following day the procession with its flagellations was repeated. In the afternoon three of the blind-folded brothers were led to the spot where there were three large, heavy, rude crosses made of pine trees on which the bark still remained. It seemed to require considerable effort on the part of four or five of the attendant brothers to lift these crosses and place them on the backs of the pilgrims, and then the procession slowly started up the canyon. The

poor wretches could barely stagger along under their heavy burdens, and finally one of them evidently fainted, for he fell, with the cross crushing the upper part of his body, and remained perfectly still until several of the attendants lifted the cross and another struck the prostrate pilgrim with a cactus whip and followed his blows with several kicks. The suffering wretch staggered to his feet and again the cross was put on his shoulders, but this time he was urged on his way at about every other step with a vicious blow from the whip of his attendant brother.

A little further on one of the other cross-bearers fell, but he seemed to have more strength than the first one who had fallen, and soon regained his feet. It seemed a pitiably long time before that strangely solemn yet pathetically hideous procession reached the little knoll where holes already had been dug for the standing up of the crosses. This knoll or hillock was called *El Calvario* — The Calvary.

Here other ceremonies were gone through, and that evening in the little church in town there was a graphic and dramatic representation of the events that followed the crucifixion — the darkness, the rending of the veil of the temple, the earthquake, and the arising of the dead from their tombs.

At Taos, at the present time, lives the Chief Brother of the whole organization. Hence the *morada* — or church — here sees many manifestations of the order's activity. It is located some distance from the town, and appears like any adobe house, save for the several large crosses that stand outside, leaning against the adobe wall of the corral. These are made of the undressed trunks or limbs of trees and are fearfully heavy, as I found out when I tried to lift them.

Inside the *morada* is an altar, fully decorated with rude paintings, figures of saints, etc., dominated by a large crucifix on which is the impaled Christ, in the most hideous realism. In addition is a small wagon — about the size of a child's toy express wagon — in which is a repulsive figure of Death, used in the lenten ceremonies of the order — for their chief activities are centered in the forty days of Lent, and the great days are Good Friday and Easter Sunday, though scourgings take place on the three days preceding the date of our Lord's crucifixion.

Taos may be reached with comparative ease from the Denver and Rio Grande Railway station of Servilleta. A stage drive of thirty miles takes one across the valley of the Rio Grande River, as Charles Francis Saunders describes it:

> Across a sunny, open mesa country, rimmed about with magnificent mountains, which the declining sun touches with fascinating colors — pink and red and wine, amethyst and violet and purple. Halfway on our journey and without warning, the highway runs out to the brink of a narrow precipitous gorge, and, six hundred feet below you, the current of the Rio Grande plunges and roars. Down it, into the depths, your team picks its way gingerly by a road cut out of the perpendicular canyon sides to meet the river and to cross it. There is a little riverside stopping-place down there where you may break your journey, if you wish; then, climbing out of the gorge by the canyon of the Arroyo Hondo, where a hurrying stream of clear mountain water flashes and bounds down among the rocks, you are again upon the wide plain. Before you is the ineffable splendour of the Rockies, their sides all splashed, if it be autumn, with the orange and gold of the aspen groves, and yonder, at the mountains' foot, where one canyon, the Glorieta, more noble than the rest, pours a flood of crystal water out into the plain, lies Taos.*

* *Indians of the Terraced Houses*, p. 98. G. P. Putnam's Sons, New York.

CHAPTER III

THE PREHISTORIC CLIFF- AND CAVE-DWELLINGS OF THE SOUTHWEST

NEVER so well as now can the intelligent American visit and understand the cliff and cave dwellings of the United States. Never before has their *relative* significance been so well understood. While an immense amount has been written upon them, half of it has been "wild, woolly, and yellow," while the other half has been purely technical and scientific, and not easily accessible to the general reader.

The boundaries of Cliff-Dweller Land in the United States may be broadly defined as including Southern Colorado and Utah, Arizona, as far west as the Colorado River, and New Mexico on the east. In this region there are found twelve separate or reasonably well-defined distinctive areas of cliff, cave, or other prehistoric dwellings.

These are (1) the ruins of the Province of Tusayan — ruins found near the present Hopi Pueblos; (2) those of the Salt and Gila River Valleys; (3) those of the Lower and Upper Verde Valleys — the latter sometimes called "The Red Rock Country"; (4) those of the San Francisco Mountain region — near Flagstaff, Arizona; (5) those of the Little Colorado River Valley; (6) those of the Canyon de Chelly; (7) those of the Navaho National Monument — Betatakin and Kitsiel; (8) those of the Pajarito Plateau,

not far from Santa Fe, New Mexico; (9) those of the Zuni region; (10) those of the Chaco Canyon; (11) those of the Mesa Verde; (12) those of the San Juan River region.

Of these separate regions numbers 1, 6, 7, 8, 9, 10, 11, and 12 are so distinctive, and so intimately connected with other features of the American Wonderlands as to entitle them to separate chapters, to which the interested reader is referred. The others, and the general conclusions drawn from a study of them all, form the subject of the remainder of this present chapter.

When these ruins originally were discovered they were thought to be scarcely related; or, if connected at all, very loosely and indifferently. Now it is believed firmly and reasonably that they were all closely connected and were, in the main, the work of the same or allied peoples, the differences being chiefly those of condition and environment.

Then, too, it must clearly be understood that there is no line of separation between the vast number of ruins of houses, of scattered pueblos, found dotted all over the major area defined above, and the cliff and cave-dwellings found in their respective limits within the same area. To trace out and finally demonstrate the relationship between these ruins and the cliff-dwellings has been the proud achievement of the new School of American Archaeology which has grown up practically within the past twenty to twenty-five years.

1893

When the United States and Mexico went to war over Texas, and the Army of the West was started out from the East to invade and subjugate New Mexico and California, the knowledge held by the world at large in regard

to the vast territory we now call New Mexico, Arizona, Colorado, Utah, and California was exceedingly limited. We knew of the city of Santa Fe, because our trappers went through the country and occasionally got into trouble there, and several of them came back and told, in book form, as did James O. Pattie, of Kentucky, of their adventures. His book was published by John H. Wood, in Cincinnati, in 1831. Of course we knew a little about California, but gold was not yet discovered, and most people thought of it only as a remote coast settlement of the Mexicans, and could not understand why Benton and Fremont and others should be so agitated about it. But Texas precipitated the trouble; Mexico and the United States went to war.

Sloat, urged on by Fremont, took possession of California, Kearny and his army annexed and possessed Santa Fe and New Mexico — which then included Arizona — and the various Indian tribes as well as the Mexicans were called upon to pay allegiance to our government. For quite a while the Navahos regarded our treaty-making with them as one of the greatest pieces of fun of the century. They were willing enough (as I shall show in the chapter on the Canyon de Chelly) to make a new treaty every month, for that meant a pow-wow, presents, beef, and the chance to steal more horses and mules, as well as make fun of the white-faced treaty-makers. What a joke it all was!

It was while these army officers were learning something of the Navahos and their peculiar tactics that they began to learn something of the country in which the Indians lived. Reconnaissance parties were sent out, and instructed to report upon whatever they saw or found of interest. Some

of these officers were keenly alive to everything that bordered upon archaeology, or seemed to promise a field for investigation and exploration. The result was that when, some twenty-five years later, the United States Bureau of American Ethnology was organized under the able directorship of Major John Wesley Powell, and the experts of the United States Geological Survey were studying every new formation they could find on the earth's surface of our new western possessions, confirmed to us at the close of the Mexican war by the Treaty of Guadalupe Hidalgo, a good deal of general knowledge was gained about the cliff-dwellings, and they were a legitimate subject for real scientific exploration and study.

The original explorers had found that the whole country, included in the territory bounded by Southern Utah and Colorado, as far east as the Rio Grande River, south to the Mexican line and, perhaps, beyond, and west pretty nearly to the Colorado River, was literally covered with ruins of towers, big communal houses, isolated clusters of house ruins, small houses, with numberless houses of similar style built in the faces of cliffs, and apparently inaccessible; while remains of prehistoric irrigation canals lined and seamed the valleys in every direction.

In addition to these ruins of communal houses, there were a number of Indian villages, called by the Spaniards and Mexicans pueblos, where communal houses of similar character were found, but in actual occupation. These inhabited pueblos reached from Taos, in Northeastern New Mexico, not far from the border of Colorado; down the Rio Grande River, on and near which there were over twenty of them; westward to the magnificent city of the

sky, Acoma, with its three-story high wall of defense perched on top of one of the most wonderful and thrilling "islands of rock" the eye of man has ever rested upon; to Zuni, where a seven-storied pueblo housed the inhabitants; and to far-away Hopiland — or, as the Spaniards called it, the Province of Tusayan — where the Hopis lived high on the summits of inaccessible mesas and performed strange religious ceremonies in which they handled deadly rattlesnakes and carried them in their mouths.

Magazine writers began to exploit these wonders, and scientists who never saw them also had to have their say, and the results were the scattering over the whole country of a vast amount of false knowledge. We heard of the Cliff-Dwellers, first of all that they were descendants of the Aztecs; hence the score or so of Aztec and Montezuma names found in the West. Then we were told that they were a dwarf race, because only a dwarf people could live in houses that had such small doorways. Next, as more cliff-dwellings were discovered, we were informed — still by the so-called scientists, most of whom had never seen a cliff-dwelling in their lives — that they were inhabited by a people who had fled to them for refuge and defense against a hostile and fierce foe, who, eventually, had exterminated them and left not a solitary descendant. Therefore they were a lost race, a people without a history, and, because they had no knowledge of writing and had left no written records, it was utterly impossible that we could ever know anything about their past, or how they had been swept so completely out of existence.

Then the real scientists got to work. They called a halt on the guesswork. They said: "We don't know, and we

never can know, unless we quit this foolish and absurd 'theorizing' and try to learn some facts upon which to base our theories. We'll excavate some of these ruins; we'll see if they have any message for us; then we'll talk to the Pueblo Indians who inhabit these modern houses, which in some respects look so much like these ancient ruins, and see what they can tell us of the ruins, and then, perhaps, putting this and that together, we may gain some real knowledge of these ruins and their former inhabitants." Accordingly, Lieutenant Cushing went to live at Zuni with the Pueblo Indians. Mr. A. M. Stephen went to Hopiland and did the same with the Hopis. Dr. Washington Matthews, whose duties as an army surgeon took him to frontier posts in Arizona and other points, began to study the Navahos; and Jackson, Holmes, Bandelier, the Mindeleffs, Colonel James Stevenson, Major Powell and others began to excavate the ruins and gather up material; and later, Fewkes, Hodge, Hough, Hewett, and others shared in the work until today we are convinced that we know much that could never have been learned had we remained foolishly content with our hit or miss guesswork.

1. *The ruins of the Province of Tusayan.* These are briefly referred to in Chapter IV.

2. *The ruins of the Salt and Gila River Valleys.* One of the most notable, as it was one of the earliest ruins described by the first white explorers of the Southwest, is the Casa Grande, situated about midway between the stations of Casa Grande and Florence, in the Gila River Valley.

The popular conception regarding it is of a solitary "great house," standing alone in a plain, the only ruin of

its kind, and possessing a mystery as great as, though different in kind from, the cliff-dwellings. This, however, is erroneous. Casa Grande is but one of many similar Southern Arizona ruins, and this structure is surrounded by other buildings and plazas covering an area of very great extent.

The ruin was first seen and described by Lieutenant Juan Mateo Mange, the nephew of the Governor of Sonora, in 1694, at the time he was acting as escort for the indefatigable missionary, Eusebio Francisco Kino, or Kuehne, the Jesuit, whose devotion to the christianization of the Indians led him to the most perilous expeditions and endeavors.

Scores of travelers have since visited and described it, but not until 1891-2 was it carefully studied by Cosmos Mindeleff, one of the Bureau of Ethnology's experts. He called attention to that which the casual observers had practically ignored, namely, the large number of surrounding ruins, which, being less imposing, indeed mostly having crumbled to mere mounds, did not seem worthy of attention. He estimated that the whole area covered by the Casa Grande group of ruins included about 1800 feet north and south, and 1500 feet east and west, or a total area of about sixty-five acres.

Regarding Casa Grande as a specific type of structure widely distributed throughout the Gila Valley, but, as far as is known, not found elsewhere, Mindeleff took this as an indication of the existence of a definite culture existent in this valley. Environment stamps itself indelibly upon the buildings any aboriginal people erect, because the problem of transportation was one they had not solved. The difference in the surroundings of this people, where rocks were exceedingly scarce, and adobe or other mud abounded,

and that where rocks were the prevailing material, reflected itself in the architecture. These people, under different climatic conditions, had to work out about the same problems of existence as had their cliff-dwelling brothers of the north.

Public interest in Casa Grande once aroused, it manifested itself in the formation and presentation of a petition to Congress for an appropriation for its preservation, and in 1899 the sum of $2,000 was set aside for this purpose. While this was altogether inadequate for the work essential to be done, it was a start, and the amount was wisely expended under Mr. Mindeleff's direction. The results were deemed so important that twice in later years Congress appropriated $3,000, making in all the sum of $8,000.

These later amounts were expended by Dr. J. Walter Fewkes, and the excavations carried on by him have widely broadened and deepened our knowledge of Casa Grande and all the ruins of the Gila and Salt River Valleys. Indeed, they conclusively proved that instead of this ruin being isolated and alone, it is one of scores of similar, though smaller, buildings, housing a population that occupied a large area, larger, indeed, than several of the eastern states, and all with the same degree of ethnic culture. These people lived in clusters of houses, surrounded by a common wall, which inclosed also massive houses that served as temples or as citadels, for protection. It is doubtful whether they were all occupied at the same time, for it has ever been the custom for these aboriginal people to keep "on the move," and as soon as a drought, or some other untoward circumstance, rendered a site unfavorable, they left it and occupied another.

These builders had two ways, at least, of erecting these large structures, the chief of which was the exact counterpart of our reinforced concrete, save that there was no steel or other reinforcement. Moulds were made, *in situ,* into which the native adobe, or other natural cement, was placed, tightly jammed down, and left to solidify before the next block was added. Where there was less need for strength the walls were made by fastening upright poles together and covering them with the mud cement, or making the mud wall, and then supporting it with poles on either side.

The conclusions to which Dr. Fewkes arrived as to the relationship of these ruins with the cliff-dwellings in the north and east are exceedingly interesting, and the student who desires to be better informed should carefully read the monograph which appears in the *Twenty-eighth Report of the Bureau of American Ethnology.*

Not far away from the Gila-Salt population was another aboriginal people, working out their life problems in their way, and we will now proceed to a brief consideration of what they have left behind them.

3. *The ruins of the Lower and Upper Verde Valleys.* In the early days of United States occupation of Arizona, the Apaches, as well as the Navahos, gave the settlers an immense amount of trouble. Conjoined with them in their deviltry were the Tontos (really the Yamapais), and the Wallapais. It took our army officers a long time to learn how to handle the Indian problem, and, when the Indians were out on the warpath, how to fight them.

To help out, military camps were established over the country, and one of these was set down in the heart of

the Verde country, and named Camp Verde. One of the medical officers of this camp was inclined to keep his eyes open, and he soon found out that the Verde region was lined, in its canyon walls, its mesa tops, its valley bottoms, with ruins of several kinds. Mindeleff, Hough, and Fewkes, in late years, have studied them, and now we know somewhat of their character, history, and the traditions connected with them. The Pueblo Indians have clearly defined traditions telling that their present population is made up of an aggregation of clans, or families, that came in one at a time from different directions, and that certain of their clans, or families, came from the Verde country. Several kinds of houses were found, but these seemed to be more the result of physical environment than anything else.

The Cliff-Dwellers built in the cliffs not so much because a warlike foe was bent on their destruction, but because the cliffs were there; they overlooked the corn-fields, and melon and squash patches, and therefore were the most convenient, easily-accessible house sites they could find. They built on the mesa tops when the mesas were more convenient, and they built on the bottom lands when such offered the most advantageous sites. These facts soon knocked out of the heads of the scientists the idea that the Cliff-Dwellers were a separate and distinct race of people. They were the same people as those who built on the mesa tops and the valley bottoms. This also disproved the idea of their being driven out of existence by a warlike foe. And we soon began to realize that Indians know nothing of the science of war as we understand it. They never plan a campaign, and carry out warfare in our sense. Driven by hunger, or restlessness, or, perhaps, desirous of avenging some real or

supposed injury or insult, a band of them starts out to make a raid. The nomad, or wandering Indians, to which class the Apaches, Wallapais and Tontos belong, not having any fixed homes, were not in the habit of accumulating food supplies.

It was a great temptation when they came upon a settlement where the inhabitants were industrial agriculturists, who stored away corn, melons, and the like for future use, and who dressed buckskin, and wove cotton, which they grew themselves, and made sleeping mats of yucca fibre, and baskets, and pottery, I say it was a great temptation to the wandering bands who had none of these things and who trusted to luck and their own thieving capacities to get them, to raid those who had been so provident as to have them. To protect themselves, therefore, when these raids began, the sedentary, or home-loving agricultural Indians, banded together. They built their great communal houses, with outer walls like rude forts, and with only a few entrances, easily defended. They tilled their fields and generally had some one on the lookout during the "raiding season," and when an alarm was given they hurried to their homes, closed up the gateways and thus were practically safe from the harrowing process. The cliff-dwellings were no more fortresses than the big community houses on the mesa tops. They were first of all houses, with outlooks over their cornfields, and then so planned that they would be easily defended in case they were raided by these wandering bands of thieving and marauding Apaches. And that is practically all there is to the cliff-dwellings.

As to their vast number, and the indications these give

of a tremendous population, we have learned that the ancestors of the present Pueblo Indians were all the time looking for good cornfields. Arizona is a country that is uncertain as to its rainfall in the valleys. It is naturally a country for irrigation. Now, while the Indians understood the art of irrigation, they were not engineers and builders enough to erect great dams and thus create storage reservoirs for cases of emergency or drought. The result was that, if one dry season came, they could stand that, perhaps two, or even three, in succession; but if a drought continued longer than that they were compelled by inexorable necessity to move on, and they seldom moved back over land they had once before occupied. Like the rest of us, they were convinced always that "it was better on before." The result was they were a people of perpetual migrations, and at each migration they deserted their former homes and built new ones. Here, then, we have the secret of the vast number of ruins found throughout this country.

The principal and best known ruins of the Verde region are the so-called Montezuma Castle and Montezuma Well. The former is located in a cliff about five miles from Camp Verde, up Beaver Creek, where the canyon wall makes a great curve, like a basin set on edge, and in the cavity thus formed, eighty feet or so above the foot of the cliff, as swallows build under the eaves of a house, the Cliff-Dwellers stuck their human nest. It is about sixty feet wide and not quite so high, four stories in front and one story higher in the rear. It is supposed it was never reached except by ladders, but the Indians say this is not so, though no person today could ever imagine how the primitive builders, no matter though they were as agile as mountain goats, could

ever have scaled that cliff. Certainly if they ever did so it was less precipitous than it is now, though the ruin itself is little changed since it was deserted.

The floors were made of adobe, or some other tenacious mud, which was also used as mortar and plaster. The fires were built in a sort of firehole in the floor, and ashes are still found there. The rafters and walls are smoky, for there was no chimney, and the smoke got out as best it could through small apertures in the walls above. There are about thirty rooms in all in the "castle," but not many doorways. Had it not been for white vandals, members of the superior race that thinks first of all of money, it would have stood for centuries, as it had done in the past, but these gophering ghouls undermined the walls, digging for treasure, dynamiting or blasting wherever they thought it would hurry their excavations. Fortunately a few public-spirited men of Arizona, led by Dr. Miller, of Phoenix, determined to save it from ruin. They went before the legislature with a broad-minded bill for its salvation and further preservation, prohibiting further irresponsible excavations, and providing for the establishment of a State Museum, to which the generous Doctor philanthropically offered the whole of his magnificent collection of over a thousand pieces of ethnological and archaeological interest.

But times were not yet ripe in Arizona politics for such a bill. It failed of passage, so Dr. Miller proceeded to interest his friends, and soon raised enough cash, with the gift of his personal services, to replace the damaged foundation, run iron rods through the building and securely anchor it to the cliff, roof it with corrugated iron where needed, construct easy approaches to it, clean out most of the rooms,

and put it, generally, in fair condition. It is now made a national monument, and as the years go by and thoughtful Americans wake up to a full appreciation of their historical memorials the name of Dr. G. W. Miller will be one of those highly honored because of his far-seeing philanthropy in saving this wonderful ruin for future generations.

About six miles farther up Beaver Creek is another wonderful cluster of cliff ruins, but they are secondary in interest to the place where they are found. This is a crater-appearing hole in the heart of a mound-like elevation by the side of the creek. As one walks up the gentle slope it looks like hundreds of other hills — a thousand — one may find in the Southwest, but as soon as he reaches the top he stops and takes a deep breath in very amazement and surprise. For there, before him, in a moment appears a vast hole, rudely circular in form, about 400 feet across in the widest part, and from sixty to eighty feet deep, at the bottom of which is a black-velvet-faced pool of water that seems as if it had sprung up in some magical fashion from the River Styx, or some equally spooky source. One's first impulse is to throw a rock into it, and looking about for one, one walks around the edge and there, on the creek side, where it has cut deep into the side of the mound during flood times, so that it appears a mere thin shell, resting right on the knife-blade edge, is a ruined pueblo. Some of the remaining walls are yet eight feet high, and it was evidently built there so as to overlook the cornfields on the creek bank beneath. Mr. C. F. Lummis says of it:

> The fort-house absolutely controlled the only reasonable entrance to the well; the only other path down to the lake's edge could be held by boys against an enemy.

Clambering down this cliff path to the little platform at the water level, one is suddenly aware of a cave mouth even gloomier than the gloomy lake. A sad little sycamore stands before it, and beyond stretches that strange, dark, unscratched mirror of the dark pool. The cave is a natural limestone cave, burrowing hundreds of feet under the hill; but at the first turn in it the explorer shivers with sudden wonder. For here, too, were the homes of the hunted Pueblos. Away back in the gloom is a strong wall of prehistoric masonry, with a narrow doorway; and back again another door and another wall, and so on. The limestone floor rings in places bell-like to the tread, and deep under it one can hear the chuckle of subterranean water sprites. Here and there, too, it is broken through, and there is the buried brook ready to be drunk from as in the old days. * * * Here are still the fragments of the Cliff-Dwellers' pottery and of their agate tools; and in one room the unforgetful mortar preserves the perfect imprint of a baby's hand that pressed it wet a thousand years, maybe, ago.*

Many of the cliff ruins of the Upper Verde are mainly caves, hollowed both by nature and man out of the soft strata found in the faces of certain cliffs. Hammered with the rude stone implements of the primitive man, great flakes fell off, and thus a small cave could speedily be enlarged to the size required. Then, for protection, a wall was built in front, or on the sides, and the back of the cliff and its upper wall, formed the back and roof of the human habitation. There are literally hundreds of such rooms and cave-dwellings in this region.

Another class of dwellings used to exist here, the remains of which can now be pointed out. These were built on foundations of heavy boulders, and consisted of the primitive man's foreshadowing of what today is known as rein-

*C. F. Lummis, "Our Western Wonderlands," in *Land of Sunshine.*

Photo by Putnam & Valentine

THE SAN FRANCISCO MOUNTAINS

NEAR FLAGSTAFF, ARIZONA

CLIFF-DWELLINGS NEAR FLAGSTAFF, ARIZONA

forced concrete. He made a rude framework of wattled willows and then plastered it on both sides with mud.

Still another indication of aboriginal man is found in the rude forts that occupy many mesa tops. These are generally made of massive loose-stone walls, several feet thick, rectangular in shape, and evidently intended solely for places of retreat in cases of sudden attack.

That these people were industrious agriculturists is proven by the many remains of irrigation canals which line and seam the hillsides and valleys. Some of these have been taken advantage of by modern farmers and are today in use.

4. *The ruins of the San Francisco Mountains region, near Flagstaff.* When I first began to visit the Flagstaff region, about thirty years ago, the livery stable keepers were just beginning to realize the commercial advantages of the cave and cliff-dwellings which had been found within some ten or twelve miles of the town. The former were located in the volcanic cones almost due east, while the latter were in Walnut Canyon, to the southeast, the ride to both of them and back, from the town, forming the three sides of a rudely equilateral triangle, each member of which was about ten miles long. The cave-dwellings were partially natural and partially excavated out of the friable volcanic breccia of which the volcanic hills are formed. Later, I shall refer to the lava fields in the neighborhood of Flagstaff, to which these hills belong.

Some of the rooms have vertical entrances; in other words, one simply drops through a hole to the level of the floor beneath. Doubtless the inhabitants used primitive ladders, as their descendants do today; for Major Powell found that the Havasupais, who now reside in Havasu—

Blue-Water — or Cataract Canyon, claim that their ancestors used to occupy these caves before and after the arrival of the Spaniards in the country. Other rooms are entered laterally, the caves being hollowed out on the same level as the entrances, though everything is rude and governed entirely by the conditions and the evident whim of the excavator. The chief evidences of anything savoring of human culture are the plastering of the rooms, the leveling and smooth surfacing of the floors by the introduction of mud cement, the metates for grinding, and the pottery that has been found.

There is a great similarity existing between these caves and those of the Upper Verde Valley, the only difference being in the material out of which the caves were hollowed. Undoubtedly, the ethnic culture of the two peoples was practically the same, hence it may have been that they were occupied by the same people, at different periods of their migrations.

5. *The Little Colorado ruins.* Some of the earliest photographs I ever made in Arizona were of ruins near the Tuba road from Flagstaff, and of others near Black Falls of the Little Colorado. In his studies of the ruins of Arizona Dr. Fewkes visited these and made a number of excavations, finding much pottery, and many stone and other implements. He found connecting resemblances in the former suggestive of both Zuni and Hopi, indicating what tradition has long asserted, that they are a related people. These ruins reach almost from the junction of the Little Colorado with the Colorado Grande, in the Grand Canyon, to all the southern tributaries and beyond, down to the headwaters of the Salt, the Gila, and the Verde.

Taken in connection with the present-day life of the modern pueblos of the Hopi, there are few objects in Arizona more interesting than these remains of a passing phase of human culture. They teach us the solidarity of human life. Man is nowhere isolated. By his very efforts and struggles, his progress and his retrogressions, he is connected with his fellows, and in what we read of the life history of the aboriginal builders of these ancient ruins, we may see the stages by which our own attainments in civilization have come.

CHAPTER IV

TO BETATAKIN AND KITSIEL

ONE of Arizona's great charms is that it is so big that hundreds of square miles are as yet unspoiled by railways, cities, and modern civilization. What a grand thing it is that a civilized, modern, city man, either of the East or the West, can, within a few hours of his own home, find not one, but a score of places, as absolutely desert and out of civilization as Burnaby found on his *A Ride to Khiva,* or Sven Hedin on his Asiatic journeys. Two of the most vivid and truthful articles that have recently appeared in American magazine literature contain the account of a trip through desert Arizona to one of the marvelous Cliff-Cities named in the heading of this chapter. Both of these ruins had recently been discovered, Kitsiel, by Richard Wetherill in 1894, and Betatakin, by Professor Byron Cummings, of the University of Utah, in 1909. These had been shown to Mr. W. B. Douglass, Especial Examiner and Surveyor of the Interior Department, and by him reported to his superiors, and they were thereupon deemed so important that they were created into the Navaho National Monument and Dr. Fewkes detailed to examine and report upon them. This report was published as *Bulletin 50* of the Bureau of Ethnology, and from it Mr. J. W. Oskison gained his information and inspiration to visit the ruins. His two articles appeared in recent numbers of *The Outing Maga-*

zine. The pictures he draws of the land and its aboriginal inhabitants, and also of the white man's general ignorance of these remote corners, are not more graphic than they are reliable, and it is to illustrate the influence this part of the Arizona country has on the minds of a blasé newspaper man that the following quotations are made. Following Dr. Fewkes's somewhat vague directions of his own journey, Mr. Oskison engaged a man at Flagstaff to take himself and companion to Betatakin. They soon discovered that their "guide" knew very little more of the country than they did: a not uncommon experience, for Arizona, with its nearly 114,000 square miles of territory, is not a small land, being very nearly as large as all New England from Maine to and including the State of New York.

Dr. Fewkes tells of three ways one can go to the Navaho National Monument, viz., via Flagstaff, Arizona; Gallup, and Farmington, New Mexico. He and Mr. Oskison went by the former route, as I myself have done a large part of the way, but on my last trip when, for the first time, I actually reached the ruins, I went in by Gallup, and out by Farmington. So that I have had the experience of all three routes. By none of them is there any regular stage — one either has to "outfit" or arrange to be taken, and the difficulty with the livery men at Flagstaff, Gallup, and Farmington is that it is very doubtful whether any of them can secure a driver who, in any true sense, is a guide, either for the wonders one should see on the way, or the ruins themselves when he arrives in the region where they are supposed to be. My advice, to those unacquainted with the country at the present date, is that they write to Wetherill and Colville, Kayenta, Arizona, and have them come to any

one of the places named, or even to Grand Canyon, Arizona, or to Mancos, Colorado, and they will give the traveler more sight-seeing and real experiences for the money expended than can be secured in any other way, or with three times the expenditure. The distance from all five places is approximately the same — from 160 to 175 miles; the country to be traversed equally picturesque, with distinct variations and experiences, which I will briefly name. For instance, from Flagstaff one can visit the Cave Dwellings, the Cliff Dwellings of Walnut Canyon, Sunset Crater and the Lava Fields, cross the Little Colorado at Volz's Crossing, and go by way of the Hopi country, seeing all the pueblos of the three mesas and the ruins of several of the older villages; or cross the Little Colorado at Tanner's Crossing, see some of the ruins on the way, then visit the Hopi agricultural village of Moenkopi, and strike north for Betatakin and Kayenta.

From Farmington one passes by the San Juan Navaho agency, at Shiprock, where the most intelligent work I am familiar with in the education of Indians is being done by the superintendent, W. T. Shelton. Shiprock itself is well worth seeing, as is also the San Juan country. By deviating from the straight road at *Tees-naz-paz* (the Circle of Cottonwoods) one may visit the Cliff ruins of the McElmo and Montezuma creeks and their tributaries, the "Land of Standing Rocks," and the famous cliff and other ruins of the San Juan, and even enjoy the rare trip to the Natural Bridges of Utah — the most wonderful natural bridges known in the world. Then the ride across country is full of strange experiences, for the white man is seldom seen, and the Navaho equally rarely builds his *hogan* in a prominent

place. Hence the country seems deserted in its native wildness and solitude.

From Gallup one visits the Haystacks, and the Navaho Indian agency at Fort Defiance, or goes more directly by way of St. Michaels, where the Franciscan Fathers have a Mission for the Navahos. Thence to Ganado is a pleasant and easy day's drive, meeting on the way Navaho teamsters and passing by *hogans* where weavers are at work making their blankets. At Ganado, as is elsewhere related, one finds a remarkable host in John Lorenzo Hubbell, a prince of good fellows, who, with his gracious daughters, sustains all the ideas of generous hospitality that have come down to us from "the Days of the Dons." Here, perhaps, the traveler may be favored with a sight of some important and imposing Navaho ceremonial and dance, or see sights of trading between the aborigine and white man that will stick in memory for many years. Then from Ganado to Chin Lee — which is at the mouth of the soul-stirring Canyon de Chelly, with its numerous Cliff-dwellings — is an interesting day's drive. And from here, across the wild and almost trackless country, to Kayenta, every hour has its own fascination and charm.

From Mancos one will visit, of course, the Mesa Verde Cliff-dwellings and the Ute Indian agency, striking across to the Montezuma and McElmo Cliff-ruins, and the Natural Bridges, and thence to Kayenta.

The rates charged by Wetherill and Colville are very reasonable, considering the specific quality and quantity of knowledge possessed by their guides, the difficult nature of the country to be traversed, and the comfort or discomfort a guide can visit upon his employer. Here are the prices I

paid, and they are the regular rates: Each pack or saddle horse in the party, $1.50 per day; guide and his horse, $8.00 per day; if the party is large enough to require it a helper must be engaged at an extra $3.50 per day. In addition, the traveler pays for all provisions for himself and guides, and all feed needed for the animals.

In my own case I left Gallup in the automobile stage which runs regularly to St. Michaels. The fare is reasonable and the ride a wonderful change to one who knows nothing but city boulevards and the fine roads of an eastern state. The roads were somewhat rough, and rain made them muddy. But the changing panorama of this vividly colored and gloriously carved land more than made up for any roughness or muddiness of the road. St. Michaels is the site of a Franciscan Mission, where a band of devoted missionaries are carrying out the ideas of the friars of early days and seeking to uplift the Navahos who for centuries have regarded this country as their legitimate home.

The following day I drove with a friend to Ganado. He had borrowed a pair of fiery and untamed broncos, but we got along well until, just as we came to the straight mile leading down to the trading-post, something went wrong and the broncos started to run. I sat back, prepared to enjoy the run-away, for I was sure my friend could handle the team, when, suddenly, crack went the single-tree, and, leaping forward at the sound, the neck-yoke was released from the pole and immediately the latter fell to the ground and began to tear up the surface with every jump. Needless to say, the wagon completely beyond guidance, a pair of maddened broncos fastened to it, the pole sticking into

the ground, and swinging first one way and then another, was an entirely different proposition from a straight runaway, and as we swung around to the left, towards a barbed-wire fence, and the broncos seemed to persist in that direction, I decided to sever my connection with that wagon-seat as speedily as I could. Jumping, I succeeded in reaching the head of one of the scared ponies, while an Indian hung onto the other, and at the same time ten, twenty, I don't know how many, hung onto the wheels. It was nothing to them: they were used to such capers, and in five minutes we marched, a triumphant procession, into Hubbell's hospitable home.

After ten days' enjoyment here, taking in Navahos and their dances, Mr. Hubbell sent a Navaho with me, driving a buckboard, across to Chin Lee. That was a great ride, especially the last two hours, with the expansive valley and the vast range of mountains immediately before us. It was over this range that the celebrated Doniphan's Expedition passed in 1847, and of which Hughes wrote:

> This party, in its march, surmounted difficulties of the most appalling nature. It passed over craggy mountains of stupendous height, winding its way up the steep and rugged acclivities, each man leading his horse among the slabs and fragments of great rocks which lay in confused masses along the sides of the mountains, having crumbled from some summit still above, obstructing the passway. Precipices and yawning chasms, fearful to behold, often left but a narrow passage, where a blunder either to the right or left would precipitate horse and man hundreds of feet below, among the jagged and pointed rocks. Indeed, this party ascended and descended mountains where, at first view, every attempt would seem fruitless and vain, and where the giddy heights and towering masses of granite seem to bid defiance to the puny efforts of man.*

* *Doniphan's Expedition,* by Col. John T. Hughes, Cincinnati, 1847.

Widely traveled Americans who think only of the Rockies and the Sierra Nevadas on their way from the Atlantic to the Pacific can scarcely realize the majesty of these three ranges, the Chusca, Tunicha, and Carrizo, all of which are in sight as one enters Chin Lee Valley. The winds, too, rush over them at times, bringing fierce and penetrating cold from the snow-fields that crown them during a large part of the year. It was cold enough for a New England winter as we approached, after dark, the cheery light of the Franciscan Mission; for this organization of pioneer missionaries of the Catholic faith has another outpost of civilization here, in the very heart of the Navaho reservation. With Fr. Leopold's cordial and hearty "Enter and warm yourself" in my ears I was at home immediately, and had no hesitancy in asking him to arrange the trip for me up the world-famous Chelly Canyon — a trip the description of which occupies a full chapter elsewhere in these pages.

Then the question arose: How was I to get on to Kayenta? In seeking its solution I talked the matter over with Mr. M. E. Kirk, one of the three Indian traders who have posts at this place. He solved it instantly, provided I was willing to go with two Navaho youths, neither of whom could speak a word of English, and ride on the top of a heavily loaded wagon and take my chances of it breaking down on the way, sticking fast, or having to complete the journey on foot. The more the trip promised of possible adventure the better I liked it, and I made my tentative arrangements at once. The only drawback was that I could not take my heavy camera and plates along, and they had to be sent around to meet me at another point.

When the auspicious morning arrived the wagon was full

to overflowing with hay, sacks of grain, boxes of canned goods, and the like, and my seat must be wherever I could fix myself on the top of the uneasy and unstable mass. I had a roll of blankets — for, of course, we were going to sleep out of doors, there not being a single house between Chin Lee and Kayenta — and enough bread, cheese, and canned fruit to last for several days. For drink on these trips I am always provided with Horlick's malted milk, which can be readily prepared either hot or cold; and for a speedy lunch, when it is not possible even to cut a slice of bread, I have a supply of Grant's crackers, made in Berkeley, California, some Horlick's milk and chocolate tablets, and a handful of raisins, nuts, or dates. Scores of times in my traveling experiences have I sat and munched away, with perfect content, at this simple and primitive lunch, when perhaps a rain-storm forbade camping, or the swift coming of night demanded haste. When one has learned from the Indians, as I did thirty years ago, the art of Fletcherizing, and has a reasonably contented mind, such a lunch is quite as satisfactory, quite as palatable, when seasoned with hunger sauce, as though it were a seven-course dinner served at Delmonico's, the Waldorf, the Fairmount, the Palace, or the Oakland, prepared by one of the few great *chefs* of the American world.

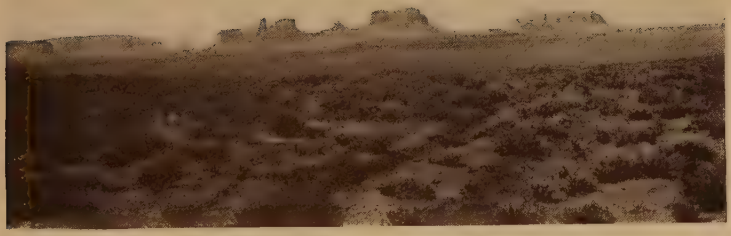
The time of the year was November, and each morning found its coating of hoar frost at this altitude — about 7,000 feet — which remained for an hour or so after sunrise. As soon as the sun set it became bitterly cold, and if the wind blew, as it sometimes did, it felt freezingly cold. Of course we had no tent, and we camped each night in the open. I had plenty of Navaho blankets, and we built a fire

for boiling water and cooking, and later made up a rousing camp-fire, which was generally replenished and kept going all through the night.

What a ride that was, and how I wish I could give the story of each day's experiences in detail. The limitations of space forbid. To climb to the top of the load was easy enough. My task began when the wagon started and came to the rough spots. There was nothing but a natural road, and after a few hours this almost entirely disappeared and we followed a mere trail, with an occasional wagon-track appearing once in a while. The glorious mountains to our right in purples, blues, and greens, seamed with black canyons, were crowned with their winter caps of snow and arose over ten thousand feet into the purest blue sky that ever overarched the home of man.

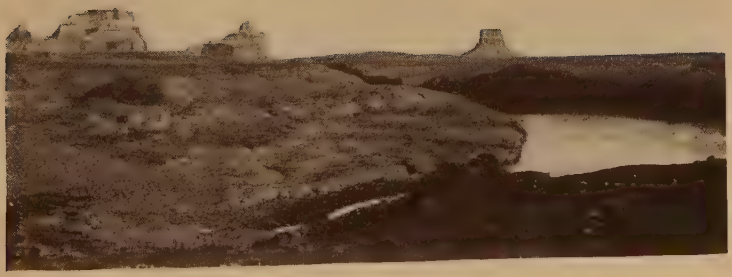
Though Mr. Oskison approached Betatakin from the opposite direction some of his descriptions will perfectly apply:

Our road ran between the fields and the foot of a shouldering wall of red rock, in the fantastically eroded crevices of which were erected the brush summer shelters of the families (of Navahos) who tilled the fields. Children swarmed over the rocks, companions of the goats and the dogs; old women and young sat in highly colored groups, sheer curiosity lighting their faces as we rode past; in the fields men working deliberately at the corn-stalks, hilled so high that the ears all but dragged on the ground; melons of all shapes, sizes and colors lay between the widely spaced hills of corn; here and there the more vivid green of an alfalfa patch showed, and down by the main wash, on beside the ancient ditches which bear the rich, silt-laden water to the fields between rounded banks hidden by grass, rose beautiful old cottonwoods. There were orchards, too, their fruits ripening to a tempting redness. At frames stretched either out of doors or just



OVER THE ARIZONA DESERT

TO BETATAKIN AND KITSIEL



THE ARIZONA DESERT

ANOTHER VIEW

CLIFF CITY OF BETATAKIN, ARIZONA

ANOTHER VIEW OF BETATAKIN

inside the wide entrances of the brush shelters, women were working slowly at the making of blankets; scarlet strings of peppers hung about on poles and over fences, and yellow strips of melon (perhaps they were squash) were drying beside piles of multi-colored corn-ears.

Color, vivid and appealing, was everywhere, the more marvelous for its contrast with the pale glory of the desert. Unchanging, silently vast, smeared with color! And these people! They aren't Indians, but Orientals.*

There was one difference, however, very marked, between Mr. Oskison's trip and mine. His was in summer — when the rains come in this part of Arizona — and mine in the beginning of winter. Though I had the cold nights the days were crystal clear, bracing and cool, yet warm enough to be pleasant. Let the other traveler tell a little more of his summer experiences:

Oh, the weariness of that road! We plunged, at ten o'clock of a blistering morning, into heavy sand of sparse sagebrush. The sand dragged at the wheels of our buckboard, the horses crawled; Martin and I tied handkerchiefs over our faces to protect our noses and eyelids from the burning reflection of the sun on the reddish sand, but Joe drove on unnoticing.

Mile after mile this road mounted gradually to the backbone of a mesa lying parallel with the upper reaches of the wash. About noon we looked back and saw through the heat-haze a monstrous black thunder-cloud coming across the desert we had passed over the day before. An hour later it hit us; at first, instead of rain, this fierce-driven storm hurled sand upon us! Sand in wonderful streamers, sand in high-tossed waves, sand in out-spread, obscuring curtains blown fantastically, sand in whirling spirals, and sand in dull, level-driven streams whipped, stung, and caressed us, sifted into our hair and through our clothes. It was a roaring, stunning sort of assault, but luckily it came upon us from behind. We plodded on, bunched against it under our ponchos, in default of anything better to do. Then came the torrent downpour.†

* *Outing Magazine*, August, 1914. † *Ibid.*

How mistaken people are who imagine it cannot rain in Arizona. Rain! I have seen it come down in such showers that in half a minute one would be wet through and the rain *sloshing* up out of his boots at each jog of his feet in the stirrups. At such times the country "smells" good. The rain seems to bring a flavor, an odor of its own along with it, and it also persuades the earth to release sweet odors it has long stored up in its breast. Then, too, it gives one a chance to take a swim now and again — even in the heart and heat of the desert. Let Oskison tell how it felt:

Down the arroyo—now a living stream—we came upon one of the loveliest pools I ever saw. It had been ground out of the soft rock to a depth of four and a half feet, and in the center was a perfect rock table, its top rising just to the surface of the pool. On both sides of the water rose fifteen-foot walls of soft rock, closer together at the top than at the pool's edge. A tiny waterfall let the flow from the wash into the pool.

In that pool it was cool — we forgot our weariness there. Saddle soreness and the excruciating tenderness of our sand-blistered and sand-abraded faces were forgotten. We stayed so long in the pool, and took so long a time afterwards to eat the good meal we cooked, that there wasn't more than an hour of sunlight left when we started on. We knew that it must be ten miles or more to Red Lake, and when we struck the road through the grease-wood we found that the rain had turned it into a nightmare of a road, inches deep with adobe mud, than which nothing in the world is more sticky and slippery.

As we splashed and slid on darkness fell; then the big full moon came up, turning the rain-pools by the road into patches of quiet silver. Back and forth across the wide flat, seeking the driest going, the vague road to Red Lake meandered; now we rode for a time under the shadow of tall cliffs, then we scraped our stirrups against a moonlighted palisade showing fantastic carvings and unexpected recesses where branch arroyos broke in from the desert above.*

* *Outing Magazine,* August, 1914.

We had no rain and no sandstorms on our trip, yet I have had them again and again at other times, so can fully vouch for the truth of these graphic quotations. But we had adventures of our own. The third day out we came, in the afternoon, to a sandy hill up which our horses in vain tried to pull the heavily-laden wagon. Useless were all the drivers' persuasions. They held the lines in *duo,* one driving the leaders, and the other the wheelers. One whipped his pair, the other persuaded his. Then they changed tactics. One made a soft hissing noise, something like that made by hostlers when they are grooming their horses, the other swore vociferously in Navaho. One invoked, the other raved; one pleaded, the other cussed, but seldom did they both hit upon the same thing at the same time. We all dismounted. I aided them with persuasion and forceful ejaculations in good and vigorous English, but there we stuck! All our efforts and endeavors were ineffective, bootless, unavailing, inutile, unprofitable, worthless, fruitless, ill-spent, barren — or, to put it in one word of simple English, supervacaneous. It is an awful thing to find your efforts supervacaneous when you are so far away from home and friends, sympathy, and help. But there we were! There was nothing else to do but unload. We took out about half the boxes, sacks, and bales of hay, and then tried again. The broncos had rested while we toiled, so this start was successful, and, once started, they were not allowed to stop until the worst of the hill was overcome. There was another hill, however, a mile or two further on, so the Navahos drove on to the top of that and to a fine camping-spot in the heart of a cluster of junipers and pinions ere they returned to where I remained with the balance of the

load. By this time it was quite dark, and on our arrival at the camping-place I lit a big bonfire to start with to enable them to see while they attended to the stock. My big cup of hot "Horlick's" never tasted better nor felt more comforting than that night; and the great charm about it is that, while it is quite as comforting, invigorating, and stimulating as coffee, one can lie down, even though he be of my nervous temperament, five minutes after drinking it, and almost as quickly as it takes me to tell about it, be sound asleep.

What a glorious outlook was ours when we awoke the next morning. Miles and miles and miles we could see in every direction, even to the far-away peaks of southern Colorado — the snowy-clad La Plata range. The atmosphere was pellucid, the frost sparkling, and it was bright and early when we started.

That day we had two experiences, though several times we had to stop, rest, and maneuver ere we could prevail upon the broncos to overcome the difficulties of the — what shall I call it? Certainly not road. The first came when we arrived at a narrow and very deep wash, across which there was no road nor bridge. One of the boys went up the wash, the other down, to see if there was a more favorable spot for us to dig a way across. To go straight across would have been impossible, as that would have run the pole into the steep bank on the opposite side, or pitched the wagon onto the backs of the broncos. I suggested that we make an oblique road going down and out on the same line. The chief difficulty of this course of procedure is that it racks the wagon as it crosses the bottom of the wash. The rear wheels are tilted at one angle, while the front ones are rudely and jerkily swinging at the opposite angle, and dur-

ing the rough swing on the pole the broncos are liable to stop. We dug for an hour or more, and then I put my roll of bedding in the bottom of the arroyo to help soften the shock. After taking out a full half of our load, I stood aside to let the Indians perform. One held the lines and whip; the other put all his weight upon the upper side of the wagon to keep it from tipping; while I helped by holding my breath. I was sure they would go over, or smash the wagon when they hit the bottom, but I was a false prophet, and glad of it, when the wagon reached the top of the other side in safety. The Navahos were for unloading and driving across again for the other half of the load, but I had had enough. I persuaded them to carry the boxes, bales, etc., across and reload on the other side.

Later in the afternoon we came to another sandy and steep place, where we stuck fast, and had to do the unloading, digging out, going on ahead, and returning for the balance of the load. I went on with the first half of the load and had the fire built, and coffee ready for the Navahos when they came up with the balance of the goods, I having had my "Horlick's," rolled into my blankets, and had a good sleep long before they arrived.

Who can tell the joy and refreshment of those out-of-door sleeps. We had bought two sheep, for food, on our way, and I was using one of the sheep-skins as a mattress under my blankets. It makes the finest bed in the world for out-of-doors sleeping.

I have said nothing of the mesas and buttes and towers we passed and saw shining in the distance. Many of them are red sandstone, and in the brilliant vividness of the sunshine they seemed like glorified homes of angels of light.

Two particularly prominent features demanded attention for at least three days, before we came anywhere near to them. One was a very sharp pointed mass of red sandstone called Agathla's Needle, and the other a Gothic cathedral of such vast dimensions that it would house any ten cathedrals of Europe and then leave room for all the reverent worshippers of Arizona to assemble within its walls.

Kayenta is the last outpost of civilization in the United States, and yet it is full of the surprises of culture. Mrs. Wetherill is a lady of refinement and education; surrounded with her books, her organ, her choice antique and modern china, and herself radiating everything charming, gracious, and entertaining. Her husband was away with a well-known Eastern millionaire and his wife, taking them on a camping-out trip to all the wonders of which this chapter is merely a hint. His partner, Mr. C. A. Colville, is a well-read, thoughtful, courteous, obliging gentleman, just such an one as it is a delight to meet in such an out-of-the-way place. I was soon made to feel at home, and when Mrs. Wetherill favored me with a sight of her charts of the various mosaic sand-altars of the Navaho medicine men; altars no other white person known has ever been privileged to see, and told me the story of their ritual and the ceremonies connected with them, the reader may perhaps begin to conceive the happiness I felt, but, unless he himself is touched with a similar "bug" of desire to know, he can never get further than a slight touch of comprehension.

For two days I enjoyed these revelations, though the windows had to be screened and the doors locked lest any Navaho unceremoniously march in upon us. This would

have meant disaster, most probably, for the one guilty of revealing these sacred mysteries, and for those to whom the secrets were given.

Hence I was saturated with the feeling, the atmosphere, the spirit of the Indian, and his ceremonial life, his marvelous environment, and his religious aspirations, when I started with a white guide and a renegade Navaho to see the ruins of Betatakin and Kitsiel.

My Navaho was a joy to look upon. His face was of bronze. Its deep furrows revealed wide, long, large experience, and the development of rugged and stalwart character. His eye was as clear as a limpid pool of purest water — the eye I have never found except in a poet or man of genius — and it spoke of serenity, calmness, self-poise. He was one of the old men of the old school. Nothing about him spoke of anything later than the Spaniard. He had no American article either of clothing or horse-equipment. His saddle was made upon a rude native tree, which, however, affords one of the most comfortable seats for long riding I have ever enjoyed. And as I can take my hundred miles a day for a month without whimpering, I think I can claim to know something about a comfortable saddle. The leather — or hide, rather — is put on while green and fastened to the tree with brass-headed nails.

The forehead of my Indian was partially covered with the *banda* that surrounded his head and held back the hair in front. At the back it was done up in a queue, somewhat after the Chinese fashion, and then doubled over and over again, until it was about eight or ten inches long and two or three inches thick. Around this a narrow woven sash in brilliant colors, mainly red, was wrapped. His shoulders

were bare but his torso was covered with the merest apology for a shirt-waist made of buckskin, the inside dyed with a powdered mineral oxide largely used for this purpose. His trousers and mocassins were of the same material, and over all and around him was wrapped a fine blanket which gave an added dignity to the natural power of his poise. For he stood over six feet high, and though fully sixty years old, walked and rode with the ease, grace, and springiness of a youthful athlete. His hands and wrists were as slender and tapered as those of a refined woman's, and he was as proud of them as the haughtiest dame that ever sat upon a throne. He wore a pair of earrings of turquoise and shell mosaic, a well-made native ring of silver in which a turquoise was set, and around his neck was a string of silver beads to every ten of which a cross was attached, and at the end of which hung a triple crescent set with turquoise. This was fine but comparatively modern. It had belonged to his grandfather; but he also wore a wampum — or shell-bead — necklace, where pieces of turquoise alternated with every three or four beads. This was his pride and joy. It was older to him than Betatakin and Kitsiel. It had come down from his ancestors who lived before these cliff-dwellings were built. And while it may seem absurd to some of my readers to relate it, I asked him how much he would sell it for, and he laughed when, after repeated offers, I finally offered him four hundred dollars, which he as positively refused as the twenty-five dollars with which I first started. In order to make up again I had to explain to him that I had merely done this to satisfy a white friend who had commissioned me to buy a real antique necklace at any price.

We three sat around the camp-fire that night, and when my Navaho friend — as I feel I am entitled to call him by now — learned that I was familiar with some of the most sacred of his rites and ceremonies, he spoke to me freely of the myths and legends of his people.

Early the next morning we pushed on down Laguna Creek and then into the side gorge, at the head of which we were to find Betatakin. I was riding along just behind the Navaho, thinking over what he had told me, and occasionally questioning him, when suddenly he stopped and pointed. There, ahead, was Betatakin. And here may I, in accordance with my plan to introduce as much as practicable of the worth-while writings of others to describe the effect of Arizona upon them, let Mr. Oskison tell how he felt in the presence:

> For fifteen minutes, I suppose, we were keyed to the highest point of expectancy. Up and up, the tiny stream was leading us, over rougher and rougher heaps of huge boulders, between greener and greener tangles of cottonwood, willows, birches, tall rushes, and waving vines; and still the towering cliff-face was unbroken.
>
> Then Martin, walking two steps ahead, suddenly stopped and put his hand out towards me. I came up to feel his fingers grip my shoulder. There, wholly revealed, was Betatakin, a long line of ruins arched over by a span of rock which leaps to such a height that it takes your breath away. Clear above the tree-tops it all rose, a dead city set in a perpendicular cliff-face and now untouched by any ray of sunlight.
>
> "I have waited here forever," it said to us, "untroubled through the years, above that tangle of reaching green. I have sat here serene, watching the suns come and go, welcoming my people in the days when they came dragging tired feet up the canyon, echoing the laughter and the wailing and the weak crying of the men and women and babies who came to me, indifferent to their departure, bearing with the few explorers

who have come to dig among my ruins, waiting for the slow disintegration of time — and now you have come!"

Dead silence, and a sort of terror — what is called awe, I suppose — for the first minute. Then, quietly, we scrambled up the last few hundred feet of vague trail to the lovely dripping-spring which issues from under the foot of the ruins.

We climbed up the narrow trail, stepping across piled shards, testing the strength of dirt-covered roofs that had lasted no one knows how many centuries, peeping through to cubicle interiors where the cliff-dwellers had conducted the business of living. Our eyes searched eagerly the face of the rock-shelter against which these rooms had been built, and we climbed ever higher as the ruins led up the pitched plane of the shelf on which they rested.

Then at about the middle of the long, flat arc of ruined dwellings, as we stood with our backs to the wall of rock, we turned our eyes outwards and upwards. What a sensation we had! Leaning far over us and framing the opposite red wall of the canyon a quarter of a mile away as well as a section of pale sky above it, the arch of rock, like some giant cathedral arch, curved eight hundred feet above us.

"Say!" gasped Martin, "I never suspected anything so stupefying! Why, these people — think of living here, in a frame like this!"

Martin's voice awoke a splendid echo; and we shouted. Up the curving vault to the top of the great arch rolled the reverberations and dropped again, until it seemed to me that the sound must carry half across Arizona. Think of having this wonderfully perfect sounding-board (six hundred feet from edge to edge and eight hundred feet from base to top) behind a chorus of strong-lunged singers! I tried to imagine what the toilers up the canyon or the climbers on the opposite cliff in ancient times must have heard in seasons of ceremonial-chants which rose slow and soft, then a little more rapidly, louder and higher, faster and more shrill as the fever waked in primitive blood, and culminating in such a maddening roll and sweep of ecstacy that the mountains were filled with sound; or the minor sweet songs of the women, who crushed the corn and baked the meat while they sat close to their skin-swathed

babies; or the hail of some deep-chested sentinel from the topmost roof.*

While Betatakin is a cliff-dwelling it is not perched high upon a tremendously precipitous cliff as are so many of the Arizona ruins. It is on the right-hand side of the "head" of the canyon where, alone, a mass of talus has fallen and up which the winding trail leads to the dwellings at their extreme right. This is the only method of access, as the rest of the ledge overlooks a direct precipice clear across to the other side.

President Taft, after seeing the report of Mr. W. B. Douglass, United States Examiner of Surveys, declared it a National Monument, and it is now, therefore, under federal protection.

To attempt to enter into a detailed description of Betatakin would be impossible in this book, hence if the reader is desirous of further knowledge I must refer him to my more extensive work devoted to this subject alone.†

While Kitsiel in many respects is equally interesting with Betatakin, our visit there must be brief. We camped out under a singing pinion tree that night, glad of the shelter from the cold wind, and made an early start next morning. We did not stop for lunch, a few Horlick's tablets and a couple of Grant's crackers giving me complete satisfaction. It was getting late as it was ere we reached the ruin. Wide, like the other, yet not half the distance, hovered over by a magnificent arch, it presents the appearance of a line of houses of two, three or more stories high, terraced and

* *Outing Magazine*, August, 1914.
† *The Prehistoric Cliff-Dwellings of the Southwest.* Little, Brown & Co., Boston.

retiring into the recess, built within the shelter of an irregular gigantic oval. Indeed it looks as if a great flat onion had been taken out of it, and one half of the mould had disappeared also.

The shadows played hide and seek with the houses, some of them receiving but little of the sun except at midday, for the ruin, being on one side of the canyon, with overhanging shelter at each end, it is protected perfectly from sun, rain, and wind. It is far easier of approach than Betatakin, though in general appearance the houses are very much alike. The eye, however, is first of all arrested by a huge log, under which one must pass to reach the rooms above. This log was once used to help hold a retaining wall, but the wall is wrecked by the slipping away of the stones which now lie at the foot of the cliff.

The chief point of difference between Kitsiel and Betatakin lies in the number of *kivas* — sacred ceremonial chambers — where much of their wonderful ritual is to this day performed by the Pueblos even as it used to be in the far-away past by the Cliff-dwellers. At the latter place there are no circular *kivas,* but Kitsiel has eight, complete or in ruins. The side walls vary in thickness from one to two feet and are built of stone laid in clay mortar, and are by far the finest pieces of masonry in the village. They are from twelve to fifteen feet in diameter.

I stayed at Kitsiel until it grew quite dark, and both my guides were impatient to be off. Personally it would have been a pleasure to spend the night in the ruins, but neither of them seemed to enjoy the suggestion, so I did not press it. Yet, as I rolled into my blankets that night, my feet to the camp-fire, I could not help asking myself many direct and

Photo by S. M. Young

TWO VIEWS OF KITSIEL, THE RUINED CLIFF CITY OF ARIZONA

searching questions as to how much farther advanced in *real* life we are today than the ancient Cliff-dweller. Are we healthier, happier, kinder, more useful? For, after all, what is advancement in civilization if it leaves out these important phases of life?

There are many other ruins in this region, but none as important as these. I left Kayenta more than satisfied with my visit and deeply grateful to Mrs. Wetherill and Mr. Colville for their helpfulness.

The return trip was made partially on horse-back, partially in the wagon of a Mormon teamster, and the last lap in an automobile from Fruitland to Farmington, New Mexico, from which point I took a horse and buggy and drove, alone, over the wild wastes to the interesting ruins of the Chaco Canyon in New Mexico.

CHAPTER V

THE CLIFF-DWELLINGS OF THE MESA VERDE

UNDOUBTEDLY of all the cliff-dwellings yet discovered none are so well known as those of the Mesa Verde in Southwestern Colorado. There has been much written about them, both of a popular and of a scientific character, and they are, in themselves, most interesting; and when their picturesque environment is considered, it is no wonder they have attracted so much attention.

Possibly Newberry was the first American explorer to see and describe to the world the wonders of the Mesa Verde, and the vast number of ruins found there and in the adjacent country, but his report made nothing like the impression produced by that of W. H. Jackson, a member of the Hayden Geological Survey of Colorado, who, in 1874-5, found this region and was detailed by his superior to make a fairly comprehensive study of the subject. His report was published in 1876, in the *Annual Report of the Hayden Survey for 1874.*

The following year W. H. Holmes, one of the geologists of the expedition, the dean of all scientific students of the Southwest, and controlling the destinies of the Smithsonian Institution and the collections of the National Museum, was detailed to accompany Jackson for the purpose of making further studies, and they included in their investigations the ancient ruins of the San Juan River region. Their report

was published in the *Bulletin of the Hayden Survey,* Vol. II, No. 1.

The region, however, was too vast for mere cursory investigation. Jackson and Holmes, had they had more time, undoubtedly would have penetrated further into the mazes of canyons of the Mesa Verde and there discovered the ruins that, a few years later, were to cause considerable stir and make the names of the cowboys (the Wetherill brothers) who discovered them world famous.

In 1892 Frederick Hastings Chapin, a New Englander who had spent several vacations rambling in the high Rockies, published, in *The Land of the Cliff-Dwellers,* accounts of his various investigations of some of the ruins of the Mesa Verde. He was the first to exploit the discoveries of the Wetherills of the Cliff-Palace, and from this time undoubtedly dates a great increase in popular interest. He claims that it was owing to the hostility of the Ute Indians that no further exploring was done after Jackson's and Holmes's visits, until the country began to be settled up by ranchers, and the Wetherills made their discoveries. In the first flush of their marvelously interesting finds, Chapin came upon them, and accompanied them upon some of their trips. In the chapter on Mancos Canyon, in his book, he describes several cliff-dwellings that escaped the notice of Jackson and Holmes, and also corrects an error in the statement of the former to the effect that no dwellings were to be found on the eastern side of the canyon. He claims that "some of the finest ruins have been discovered upon the eastern face of the cliffs."

In the next chapter he proceeds to describe ruins found in Acowitz Canyon. This is a canyon that joins Mancos from

the east, and is one of the finest of the side gorges. Ascending to the top of the mesa, Chapin, with a friend named Howard, and Richard and John Wetherill, proceeded to the ruins.

But by far the most strikingly picturesque ruin of the Mesa Verde is the Cliff-Palace. Here is Baron Nordenskiöld's story of its discovery:

The researches of Holmes and Jackson were until very recently the main sources of our information as to the ruins of Southwestern Colorado. The cliff-dwellings which they saw and described are, however, small and insignificant in comparison with those discovered in recent times. [This was written in 1893.] If they had only left Mancos Canyon and followed one of its northern lateral canyons for a few kilometers, they would have found ruins so magnificent that they surpass anything of the kind known in the United States. The honor of the discovery of these remarkable ruins belongs to Richard and Alfred Wetherill of Mancos. The family own large herds of cattle, which wander about on the Mesa Verde. The care of these herds often calls for long rides on the Mesa and in its labyrinth of canyons. During these long excursions, ruins, the one more magnificent than the other, have been discovered. The two largest were found by Richard Wetherill and Charley Mason one December day in 1888, as they were riding together through the pinion wood on the Mesa, in search of a stray herd. They had penetrated through the dense scrub to the edge of a deep canyon. In the opposite cliff, sheltered by a huge, massive vault of rock, there lay before their astonished eyes a whole town, with towers and walls, rising out of a heap of ruins. This grand monument of bygone ages seemed to them well deserving of the name of Cliff-Palace. Not far from this place, but in a different canyon, they discovered on the same day another very large cliff-dwelling; to this they gave the name of Spruce-tree House, from a great spruce that jutted forth from the ruins.*

* *The Cliff-Dwellings of the Mesa Verde,* by Gustav Nordenskiöld, Stockholm, 1893.

Courtesy of Denver & Rio Grande R. R.

CLIFF-DWELLINGS

MESA VERDE NATIONAL PARK, COLORADO

Courtesy of Denver & Rio Grande R. R.

THE BALCONY HOUSE

CLIFF-DWELLINGS, MESA VERDE, COLORADO

The following is the first account ever written of the discovery, and as it is generally accurate, it is particularly of interest:

Narrow, winding defiles, precipitous walls, bold headlands, and overhanging ledges are the characteristics of Cliff Canyon, and within its labyrinths are most remarkable ruins. Here it was that Richard Wetherill found a large structure, which he has called the "Cliff-Palace." This ruin, which is situated in a branch of the left hand fork, can be reached in about five hours from Mancos Canyon. A long day's ride over the mesa from the ranches will also accomplish the distance, but the journey from the Mancos is by far the easier of the two.

On reaching the brink of the canyon opposite the wonderful structure, the observer cannot but be astonished at the first sight of the long line of solid masonry which he beholds across the chasm, here but a thousand feet wide. In the first burst of enthusiasm it strikes one as being the ruins of a great palace erected by some powerful chieftain of the lost people. The best time to see the ruin is in the afternoon, when the sun is shining into the cavern. The effect is much finer than when viewed in the morning. Surely its discoverer did not exaggerate the beauty and magnitude of this strange ruin. It occupies a great space under a grand oval cliff, appearing like a ruined fortress, with ramparts, bastions, and dismantled towers. The stones in front have broken away; but behind them rise the walls of a second story, and in the rear of these, in under the dark cavern, stands the third tier of masonry. Still farther back in the gloomy recess, little houses rest on upper ledges. A short distance down the canyon are cosy buildings perched in utterly inaccessible nooks. The scenery is marvelous; the view down the canyon to the Mancos alone is worth the journey to see.

To reach the ruin, one must descend into the canyon from the opposite side. What would otherwise be a hazardous proceeding is rendered easy by using the steps which were cut in the wall by the builders of the fortress. There are fifteen of these scooped-out hollows in the rocks which cover perhaps half of the distance down the precipice. At that point the

cliff has probably fallen away; but, luckily for the purpose of the adventurer, a dead tree leans against the wall, and descending into its branches, he can reach the base of the parapet. One wonders at the good preservation of these hand-holes in the rocks; even small cuttings, to give place for a finger, are sometimes placed exactly right even in awkward places. It is evident why they were so placed, and that they have not been changed by the forces of the air in the several hundred years that have probably elapsed since they were chipped out by an axe made of firmer rock. There occurs to my mind but one explanation of this preservation: erosion by wind is one of the important factors in chiseling rock forms about the Mancos, and as we observed sand in these hollows, we suppose the wind at times keeps the grains eddying round, and thus the erosion in the depression keeps pace, perhaps even gains, on the rate of denudation of the smooth cliffs.

It takes but a few minutes to cross the canyon bed. In the bottom is a secondary gulch, which requires care in descending. We hung a rope or lasso over some steep smooth ledges, and let ourselves down by it. We left it hanging there, and used it to ascend by on our return.

Nearer approach increases the interest in the marvel. From the south end of the ruin which is first attained, trees hide the northern walls; yet the view is beautiful. The space covered by the building is four hundred and twenty-five feet long, eighty feet high in front, and eighty feet deep in the center. One hundred and twenty-four rooms have been traced out on the ground floor. So many walls have fallen that it is difficult to reconstruct the building in imagination; but the photographs show that there must have been several stories; thus a thousand persons may easily have lived within its confines. There are towers and circular rooms, square and rectangular enclosures, all with a seeming symmetry, though in some places the walls look as if they had been put up as additions in later periods. One of the towers is barrel-shaped; others are true cylinders. The diameter of one circular room, or estufa, is sixteen feet and six inches; there are six piers in it, which are well plastered, and five recess holes, which appear as if constructed for shelves. In several rooms are good fireplaces. One of

our party built a fire in the largest one, which had a flue, but found the draught too strong, for his light wood came near going up with the smoke. In another room, where the outer walls have fallen away, an attempt was made at ornamentation: a broad band had been painted across the wall, and above it is a peculiar decoration which is shown in one of the illustrations. The lines were similar to embellishment on the pottery which we found. In one place corncobs are imbedded in the plaster in the walls, showing that the cob is as old as that portion of the building. The cobs, as well as kernels of corn which we found, are of small size, similar to what the Ute squaws raise now without irrigation. Besides corn, it is known that the race of Cliff-Dwellers raised beans and squash; we frequently picked up stems of the latter. It is not known that they owned domestic animals, but they had turkeys. We found a large stone mortar, which may have been used to grind the corn. Broken pottery was everywhere, similar to specimens which we had collected in among the valley ruins, convincing us of the identity of the builders of the two classes of houses; and we found parts of skulls and bones, fragments of weapons, and pieces of cloth. One nearly complete skeleton lies on a wall, waiting for some future antiquarian. The burial-place of the clan was found under the rear of the cave.

Notwithstanding the imposing name which we have given it, and which its striking appearance seems to justify, it was a communistic dwelling. There is no hall leading through it, and no signs that it was a home prepared for a ruler of the people. It owes its beauty principally to the remains of two towers; it probably owes its magnitude to the fact that the length of the platform and depth and height of the natural arch allowed of such a building in such a remote quarter.

Naturally this huge ruin interested us as much as anything that we met with in our trips. It deserves study by expert archaeologists. Thorough and careful excavation would perhaps reveal many relics which might throw light on the early history of the primitive inhabitants. It is to be hoped, however, that any work which may be done here in the future will be carried on under competent supervision, and that the walls will not be damaged in any way. Collectors, so far, have been

very thoughtful. With a suitable appropriation, this structure could be converted into a museum, and be filled with relics of the lost people, and become one of the attractions of Southern Colorado.*

This suggestion of Mr. Chapin has been carried out. The government has restored it under the able direction of Dr. Fewkes, who has also prepared a beautifully illustrated *Bulletin, No. 41,* describing the ruin in detail, and it is now one of the carefully-guarded national monuments of the public domain. This and a companion *Bulletin, No. 51,* one dealing with the Cliff-Palace and the other with the Spruce-tree House, may be had on application to the Superintendent of Documents, Washington, D. C., on payment of a small sum. A free pamphlet is also issued by the government which may be had from the Superintendent of the Mesa Verde National Park, Mancos, Colorado, which gives full particulars of how best to reach and see all the antiquities of this fascinating region.

* *The Land of the Cliff-Dwellers,* by F. H. Chapin. W. B. Clarke & Co., Boston, 1892.

CHAPTER VI

OLD SANTA FE AND THE LAND OF THE DELIGHT MAKERS

ONE of the most fascinating books ever written on the Southwest, and not less instructive than fascinating, is Adolf Bandelier's *The Delight Makers.* Unfortunately, it is now out of print—a reflection upon the wisdom and patriotism of the people of the United States, for this book should be read and studied in every high school and college in the land, as a textbook on aboriginal life. In its preface Professor Bandelier says:

> The greater part was composed in 1885, at Santa Fe. . . . I was prompted to perform the work by a conviction that however scientific works may tell the truth about the Indian, they exercise always a limited influence upon the general public; and to that public, in our country as well as abroad, the Indian has remained as good as unknown. By clothing sober facts in the garb of romance I have hoped to make the "Truth about the Pueblo Indians" more accessible and perhaps more acceptable to the public in general.

The Delight Makers, themselves, were the members of a society of fun-producers, professional clowns, vaudeville performers, whose duty it was to create amusement for the Indians at their annual festivities. And these Indians were among the number of the cliff and cave-dwellers of the Southwest. Their home was in the mountains some twenty miles west of Santa Fe, skirting the Rio Grande River.

While the mountains appear bald-crested, dark, and forbidding, they conceal and shelter in their deep gorges and clefts many a spot of great natural beauty, surprisingly picturesque, but difficult of access. From the river these canyons can be reached only by dint of toilsome climbing and clambering; for their western openings are either narrow gaps, or access to them is barred by colossal walls and pillars of volcanic rocks. The entire formation of the chain, as far as it faces the Rio Grande, is volcanic; the walls of the gorges consisting generally of a friable white or yellowish tufa containing nodules of black, translucent obsidian. The rock is so soft that in many places it can be scooped out or detached with the most primitive tools, or even with the fingers alone. Owing to this peculiarity the slopes exposed to the south and east, whence most of the heavy rains strike them, are invariably abrupt, and often even perpendicular; whereas the opposite declivities, though steep, still afford room for scanty vegetation. The gorges run from west to east; that is, they descend from the mountain crests to the Rio Grande, cutting the long and narrow pedestal on which the high summits are resting.

Through some but not all of these gorges run never-failing streams of clear water. In a few instances the gorge expands and takes the proportions of a narrow vale. Then the high timber that usually skirts the rivulets shrinks to detached groves, and patches of clear land appear, which, if cultivated, would afford scanty support to one or two modern families. To the village Indian such tillable spots were of the greatest value. The deep ravine afforded shelter not only against the climate but against roving enemies, and the land was sufficient for his modest crops; since his wants were limited and game was abundant.

The material of which the walls of these canyons are composed, suggested in times past to the house-building Indian the idea of using them as a home. The tufa and pumice stone are so friable that, as we have said, the rock can be dug or burrowed with the most primitive implements. It was easier, in fact, to excavate dwellings than to pile up walls in the open air.

Therefore the northern sides of these secluded gorges are

perforated in many places by openings similar in appearance to pigeon holes. These openings are the points of exit and entrance of artificial caves, dug out by sedentary aborigines in times long past. They are met with in clusters of as many as several hundred; more frequently, however, the groups are small. Sometimes two or more tiers of caves are superimposed. From the objects scattered about and in the cells, and from the size and disposition of the latter, it becomes evident that the people who excavated and inhabited them were on the same level of culture as the so-called Pueblo Indian of New Mexico.*

The most interesting of these canyons, and the cliff-dwellings found therein, is that of the Rito de los Frijoles. The lower five miles of its course is the important section, and in this a stretch covering less than two miles contains the dwellings we are to visit. The northern wall of the Rito is a bold escarpment from 200 to 300 feet in height, rising above a sloping talus. The southern wall, on the other hand, is gently sloping, fairly well timbered and grassed, and possesses none of the bold mural faces that characterize its opposing wall. All along the foot of this northern wall, for a mile and a quarter, extend the cliff-houses of the people of the Delight Makers. On the floor of the valley are the remains of four great community houses, possibly something after the style of those we have seen at Taos, though the ground plan of the chief one shows it to have been circular in form.

This circular house, known as the *Tyuonyi,* was built of blocks of volcanic tufa, regular in construction, and three stories high, the three-storied wall outside, and the terraces thus facing the inner court. Unlike most of the com-

* *The Delight Makers,* by A. F. Bandelier. Dodd, Mead & Co., New York, 1890.

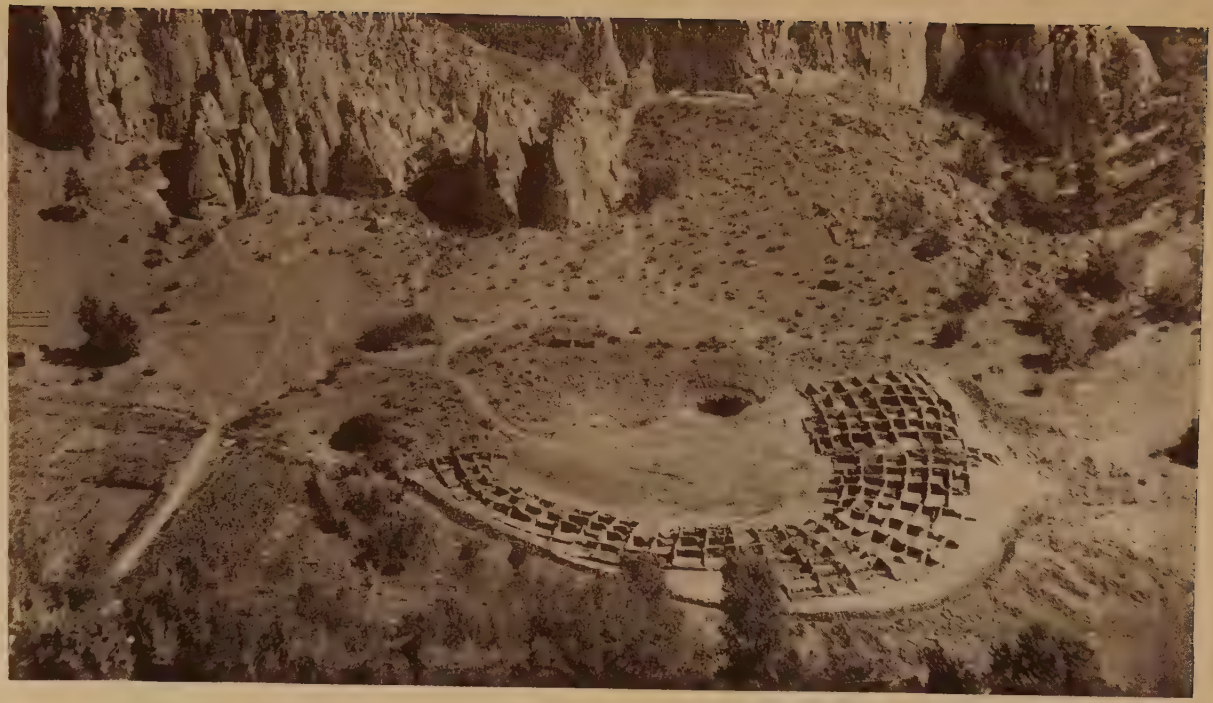
munity houses found in the Southwest, which generally are built without any preconceived plan, being added to as circumstances require, this gives evidence of having been carefully constructed on a laid-out scheme. It could easily and quickly have been made into a fortress, for the only entrance to the inner court was through a narrow passageway on the eastern side. This was defended with a double system of barricades, and on an emergency could have been completely closed up.

On the rim of the mesa above, near the southern brink of the canyon, was another community house, so the indications are that the Rito at one time was fairly populous.

Professor Bandelier thus writes of the Rito:

The Rito is a beautiful spot. It is a narrow valley, nowhere broader than half a mile; and from where it begins in the west to where it closes in a dark and gloomy entrance, scarcely wide enough for two men to pass abreast, in the east, its length does not exceed six miles. Its southern rim is formed by the slope of a timbered mesa, and that slope is partly overgrown by shrubbery. The northern border constitutes a line of vertical cliffs of yellowish and white pumice, projecting and reentering like decorations of a stage — now perpendicular and smooth for some distance, now sweeping back in the shape of an arched segment. These cliffs vary in height, although nowhere are they less than two hundred feet. Their tops rise in huge pillars, in crags and pinnacles. Brushwood and pine timber crown the mesa of which these fantastic projections are but the shaggy border.

Through the vale itself rustles the clear and cool brook to which the name of Rito de los Frijoles is applied. It meanders on, hugging the southern slope, partly through open spaces, partly through groves of timber, and again past tall stately pine trees standing isolated in the valley. Willows, cherry trees, cottonwoods, and elders form small thickets along its banks. The Rito is a permanent streamlet notwithstanding its small



RUINS OF TYUONYI

PAJARITO PARK, NEW MEXICO

Courtesy of Denver & Rio Grande R. R.

RUINS OF PUYÉ

PAJARITO PARK, NEW MEXICO

Courtesy of Bureau of American Ethnology

CAVE-DWELLING RUINS AT PUYÉ

size. Its water freezes in winter, but it never dries up completely during the summer months.

Bunches of tall grass, low shrubbery, and cactus grow in the open spaces between rock debris fallen from above. They also cover in part low mounds of rubbish, and ruins of a large pentagonal building erected formerly at the foot of a slope leading to the cliffs. In the cliffs themselves, for a distance of about two miles, numerous caves dug out by the hand of man are visible. Some of these are yet perfect; others have wholly crumbled away except the rear wall. From a distance the portholes and indentations appear like so many pigeons' nests in the naked rock. Together with the cavities formed by amygdaloid chambers and crevices caused by erosion, they give the cliffs the appearance of a huge, irregular honeycomb.*

During the past few years the Society of American Archaeology has been doing considerable excavation work in the Rito and other cliff-dwelling canyons of the Rio Grande country. It has become, therefore, the one spot in this portion of the Southwest where the life and culture of the Pueblo Indians of the past can best be studied. With Professor Bandelier's book in hand, after a brief study of the ruins, one can reconstruct the life of this primitive people. In Chapter VI we are given a most vivid and entertaining picture of the festival occasion in which the Delight Makers especially shone.

See the procession of the dancers. They approach slowly, moving with a rhythmic shuffling-forward of the feet, kept in time by the penetrating and insistent note of the drum. Now the men begin to leap up and down in their fantastic dance step, while the women still maintain their foot-shuffling progress. All are tricked out in their gaudiest finery, and their faces and the partially nude bodies of the men are

* *The Delight Makers*, pp. 3, 4.

streaked, splotched, and daubed over with whitewash. For some time a chorus of men's voices has been heard, strong, resonant, untrained, but impressive and forceful. They follow the dancers, and as they advance they gesticulate with their hands and arms, as if seeking to interpret the words of their song. The drummer is an old man, adorned with an eagle's feather behind each ear. The drum is made of a portion of a hollow tree, over each end of which green rawhide was stretched, the two ends bound together with lacing strips, which, when dried, tightened the drumhead almost as effectively as the mechanical methods followed today.

The whole population of the Rito listens to this primitive concert and watches this primitive dance with profound interest, the spectators crowded on the roof of the great terraced house. Bye and bye, however, they begin to comment, critically and with the utmost freedom, upon what they see. Everything comes in for their scrutiny and verbal castigation. Men laugh, jeer, mimic, and poke fun and women do the same, selecting any one, of either sex, as the object of their humor.

Suddenly half a dozen clowns, stark naked save for ragged breech clouts, their bodies and faces daubed as are those of modern clowns in a circus, come running, hopping, rolling, stumbling, capering, frolicking into the inner court. They are greeted with laughter and boisterous expressions of mirth. These are the real Delight Makers, whose business it is to make fun for the people. To attempt to describe their rude, often coarse, sallies, their jests, horseplay, grimaces, practical jokes, mimicry, foolery, and wild capers would occupy many pages.

In the meantime, in the sacred underground chamber, the

Kiva, the chief medicine man is preparing the altar for the prayers of this festival day. The dancing, frolicking, and fun are all a part of the religious ceremonies. Rude, foolish, ribald, and coarse as they seem to us, they have a profound significance to this religious people. These frolics help to banish gloom, mourning, evil thoughts, ill will, hatred — hence are good and meet with the approval of Those Above. These simple people firmly believed that whoever mourns or harbors ill will cannot expect his task to prosper. Therefore to sow a field of corn, beans, melons, or squashes with evil in his heart would be to ensure failure.

Following the dance the more formal prayers were offered in the *Kiva,* gifts made to the gods, and then the final dance performed. Here is Bandelier's graphic picture:*

> The singers were reinforced by several aged men with snow-white hair, three of whom wore dark wraps, sleeveless and covered with red embroidery. These were the chief penitents; those without badges or distinctive dress, the principal shamans (medicine men) of the tribe. A thrill of excitement ran through the spectators; children on the roofs gathered in groups, moving in harmony with the strong rhythmic noise below. The jesters had become very quiet; they went about gravely keeping order, for the court was now filled with performers. The green headdresses waved like reeds before the wind, and the whole space looked like a rhythmically wafted cornfield. When the dancers were executing the beautiful figure of the planting of the maize, man and woman bending outward simultaneously, each one to his side, and all the rattles sounding as if upon command — everything around was hushed; everybody looked on in respectful silence, so correct were the motions, so well-timed and so impressive the sight.*

Santa Fe, the capital city of New Mexico and the heart of this cliff-dwelling region, is itself a fascinating, romantic,

* *The Delight Makers,* pp. 152, 153.

and historic place. Redolent of memories of the old *Conquistadores,* it owns one of the oldest churches in the United States, and is the proud possessor of the only Governor's Palace the country affords. Walls six feet thick are said to cover the remnants of pueblo houses, with their conical fireplaces, corn storages, and meal bins, and the old beams of the ceiling have looked down upon as varied and remarkable a history as any room in America has had. For here the Spanish governors lived and played, worked and schemed, loved and hated, slept and dreamed. Here came, according to Bandelier, one of the murderers of the great French explorer, La Salle. Pursued by the memory of his hideous crime, Jean L'Archevêque, the French-Canadian youth, wandered from the scene of the murder on Trinity Bay, Texas, to this out-of-the-way spot, where he was engaged by the Spanish governor, and lived at Santa Clara and San Ildefonso, until a violent death removed him.

What bloody scenes were witnessed here in the Pueblo Indian rebellion of 1680! Popé, an aboriginal patriot, arose and denounced the Spaniards, but went farther. He was a man endued with the military spirit of action. With other brave men he plotted the complete overthrow of the hated invaders, and set the day for the uprising that should cast them forth or slay them — men, women, and children, and especially the hated long-gowns — the Franciscan friars. The Spanish governor, Otermin, got news of the plot and it was partially frustrated in that the patriots were forced to a premature uprising. But it was fearfully disastrous to Spanish rule. Hundreds were slain, and from 1680 to 1693, when Don Diego de Vargas reconquered the country, the Pueblos enjoyed their freedom. There was another

uprising in 1696, but soon thereafter the rule of the Spaniards became firm and the Indians have never since been free. The old palace saw governor after governor of both Spanish and Mexican rule, and then became the seat of power of the United States. Here it was that General Lew Wallace lived for a while, and is said to have written part of his great novel, *Ben Hur,* while his wife wrote interestingly if not accurately of the Pueblos. Today this historic building is appropriately converted into a State Museum, and is one of the places that all travelers to the Southwest should visit.

CHAPTER VII

CANYON DE CHELLY, DEL MUERTO AND MONUMENT CANYONS, AND THEIR RUINS

FOR years this French-appearing name has been one to conjure with throughout the whole Southwest. It has evoked as many wonder pictures as have references to the Grand Canyon of the Colorado River, and, in the very earliest days of the United States' occupancy of New Mexico (which included what is now Arizona) it thrilled the heart of every soldier likely to be called upon for service in the region because of its unknown mysteries. We do not know when it was first seen by the white man, and we have no record that the Spaniards ever visited it, though they reached the Hopi villages, comparatively speaking nearby, and established churches there. Possibly trappers — those brave pioneers of civilization, whose very profession makes them keep ahead of all settled populations — were the first to bring back stories of Chelly Canyon and its wonders. Then, when the gold rush to California attracted men from all parts of the world, rumors began to circulate about this wonderful place, in which lived the warlike and semi-nomadic Navaho Indians, so that it is possible that some of the Utah and Arizona Mormons had either seen or heard of them, and when they joined the rush to the California gold fields told their stories as they sought to while away the long evenings around the campfire. Possibly members

of the Mormon Battalion that formed later a part of Kearny's Army of the West, that marched to San Diego in 1846, had visited the canyon and its ruins, for the Mormons early reached out to convert the Hopis and the Navahos, it being thought their doctrine of polygamy might appeal to them. I do not know exactly when they settled near the Hopi farming village of Moenkopi, but it is well known that they succeeded in obtaining the land and springs of Tuba, the Hopi chief, and there established the town of Tuba City, where they were brought in daily contact with Navahos from all parts of the country.

Doniphan, the officer in charge of one branch of this army of Kearny's, received the following order October 2, 1846:

> To march into the Navaho country, cause all the prisoners, and all the property they hold which may have been stolen from the inhabitants of the territory of New Mexico, to be given up; and he will require of them such security for their future good conduct, as he may think ample and sufficient, by taking hostages or otherwise*

Hughes's account of this expedition, and everything connected with it, is fascinating reading to those who like to know the early history of our western wilds. Major Gilpin, who, early in September, had been sent ahead to pacify the border tribes of Utah, before the Doniphan expedition was deemed necessary, was now called upon by Doniphan to join him. In so doing he had to pass the mouth of the Chelly Canyon. Hughes thus refers to it:

> This day they came to the Challé and passed within a few miles of the celebrated stronghold or presidio (fort) of the Navahos, called El Challé.†

* *Doniphan's Expedition.* † *Ibid.*

From this it is apparent that, already, Canyon de Chelly had a widespread reputation as the site of a great fortress of the warlike Navahos. It must be remembered in this connection that the Americans were now in daily contact with the Mexicans, with whom the Navahos had been at war since the days of the coming of the Spaniards, three hundred years before. To the Mexicans the Navahos were sons of evil, children of the devil, bugaboos with which to frighten their children, and warriors of whom all save the bravest stood in honest dread.

Gilpin arrived at the place appointed for rendezvous, *Ojo del Oso* — the spring of the bear — where Fort Wingate, New Mexico, now stands, on November 20, bringing many professed Navaho chiefs with him. Doniphan arrived on the 21st, and the following day a treaty of peace was concluded with them.

For several reasons, however, this treaty was not kept, and the Navahos continued their hostile raids and depredations, stealing with equal frequency and indifference alike from Indian, Mexican, and American. This led to another expedition, in 1849, under Lieutenant-Colonel J. M. Washington, of which Lieutenant J. H. Simpson was a member. He thus writes of Canyon de Chelly:

> This canyon has been for a long time of distinguished reputation among the Mexicans, on account of its great depth and impregnability — the latter being not more due to its inaccessibility than to the fort which it is said to contain. This fort, according to Carravahal, our guide, is so high as to require fifteen ladders to scale it, seven of which, as he says, on one occasion, he ascended; but, not being permitted to go higher, he did not see the top of it.*

* *Report of Lieut. J. H. Simpson of an Expedition into the Navaho Country*, Washington, 1850.

Courtesy of Bureau of American Ethnology

MUMMY CAVE, CANYON DE CHELLY

Courtesy of Bureau of American Ethnology

THE WHITE HOUSE

CLIFF-DWELLINGS, CANYON DE CHELLY

Simpson and his party went quite a distance up the canyon, but, of course, found no fortress. He did find something, however, of great interest — several groups of cliff-dwellings, which he described, thus giving to the world the first knowledge obtained of these human residences, which for half a century or more were to be a puzzle and marvel to the world. His observations are so important that they are worthy a place, entire, in this chapter.

Agreeably to the orders of the colonel commanding, I left camp at 7:30 this morning (September 8, 1849) to make a reconnaissance of the renowned Canyon of the Chelly. In addition to my two assistants, the two Kerns, and Mr. Champlin, there were in the company an escort of about sixty men.

. . .

Reaching the mouth of the Canyon de Chelly, we turned to the left to go up it. Its escarpment walls at the mouth we found low. Its bottom, which in places is as little as one hundred and fifty feet wide, though generally as wide as three or four hundred feet, is a heavy sand. The escarpment walls, which are a red amorphous sandstone, are rather friable, and show imperfect seams of stratification; the dip being slight, and towards the west.

Proceeding up the canyon, the walls gradually attain a higher altitude, till, at about three miles from the mouth, they begin to assume a stupendous appearance. Almost perfectly vertical, they look as if they had been chiseled by the hand of art; and occasionally curious marks, apparently the effect of the rotary attrition of contiguous masses, could be seen upon their faces.

At the point mentioned, we followed up a left-hand branch of the canyon; this branch being from one hundred and fifty to two hundred yards wide, and the enclosing walls continuing stupendous. [Here follows a short description of a side canyon, where nothing of importance is seen.]

Retracing our steps to the primary branch we had left, we followed it up to its head, which we found but two or three hundred yards above the fork, the side walls still continuing

stupendous, and some fine caves being visible here and there within them. I also noticed here some small habitations, made up of natural overhanging rock, and artificial walls, laid in stone and mortar; the latter forming the front portion of the dwelling.

Thus is heralded in American literature for the first time the cliff-dwellings. The soldier in Lieutenant Simpson was too much occupied with ideas of the great fort of the Navahos to realize the vast importance of the discovery he was making. He continues:

Having got as far up the lateral branches as we could go, and not yet having seen the famous fort, we began to believe that, in all probability, it would turn out to be a fable. But still, we did not know what the main canyon might yet unfold, and so we returned to explore it above the point or fork at which we had left it. Starting from this point, our general course lay about southeast by east. Half a mile further, or three and a half miles from the mouth of the canyon, on its left escarpment, I noticed a shelving place where troops (but not pack animals) could ascend and descend. Less than a mile further, I observed, upon a shelf in the left-hand wall, some fifty feet above the bottom of the canyon — unapproachable except by ladders, the wall below being very nearly vertical — a small pueblo ruin, of a style of structure similar, to all appearances, to that found in the ruins on the Chaco. I also noticed in it a circular wall, which, in all probability, has been an *estuffa*.* The width of the canyon at this point is probably from two to three hundred yards, the bottom continuing sandy and level. And, what appears to be singular, the sides of the lateral walls are not only as vertical as natural walls can well be conceived to be, but they are perfectly free from a tallus of debris, the usual concomitant of rocks of this description. Does not this point to a crack or natural fissure as having given origin to the canyon, rather than to aqueous agents, which, at least at the present period, show an utter inadequacy as a producing cause?

*Spanish, *estufa*, a stone, a warm, close room. The Spanish name given to the Indian *kiva*.

About five miles from the mouth, we passed another collection of uninhabited houses, perched on a shelf in the left-hand wall. Near this place, in the bed of the canyon, I noticed the ordinary Navaho hut, and close by it a peach orchard. A mile further, observing several Navahos, high above us, on the verge of the north wall, shouting and gesticulating as if they were very glad to see us, what was our astonishment when they commenced tripping down the almost vertical wall before them as nimbly and dexterously as minuet dancers? Indeed, the force of gravity, and their descent upon a steep inclined plane, made such a kind of performance absolutely necessary to insure their equilibrium. All seemed to allow that this was one of the most wonderful feats they had ever witnessed.

Seven miles from the mouth, we fell in with considerable pueblo ruins. These ruins are on the left or north side of the canyon, a portion of them being situated at the foot of the escarpment wall, and the other portion some fifty feet above the bed of the canyon. The wall in front of this latter portion being vertical, access to it could only have been obtained by means of ladders. The front of these ruins measures one hundred and forty-five feet, and their depth forty-five. The style of structure is similar to that of the pueblos found on the Chaco; the building material being of small, thin sandstones, from two to four inches thick, imbedded in mud mortar, and chinked in the facade with small stones. The present height of its walls is about eighteen feet. Its rooms are exceedingly small, and the windows only a foot square. One circular estuffa was all that was visible.

Half a mile above these ruins, in a reentering angle of the canyon, on its left side, are a peach orchard and some Navaho lodges. Proceeding still further up the canyon, the walls, which yet preserve their red sandstone character, but which have increased in the magnificence of their proportions, at intervals present facades hundreds of feet in length, and three or four hundred in height, and which are beautifully smooth and vertical. These walls look as if they had been erected by the hand of art — the blocks of stone composing them not unfrequently discovering a length in the wall of hundreds of

feet, and a thickness of as much as ten feet, and laid with as much precision, and showing as handsome and well-pointed and regular horizontal joints, as can be seen in the custom-house of the City of New York. . . .

Having ascended the canyon nine and a half miles, the horses of the Pueblos in company with us not being strong enough for a further exploration, there being no prospect of our seeing the much-talked-of *presidio* or fort of the Navahos, which had all along been represented to us as being near the mouth of the canyon, and the reconnaissance having already been conducted further than Colonel Washington had anticipated would be found necessary, the expedition returned to camp, highly delighted with what they had seen. We found, however, the further we ascended it, the greater became the altitude of its enclosing walls; this altitude, at our point of returning, being (as I ascertained by an indirect measurement) five hundred and two feet. The length of the canyon is probably about twenty-five miles. Its average width, as far as we ascended it, may be estimated at two hundred yards. . . .

Should it ever be necessary to send troops up this canyon, no obstruction would be found to prevent the passage of artillery along its bottom. And should it at the same time, which is not at all unlikely, be necessary that a force should skirt the heights above to drive off assailants from that quarter, the south bank should be preferred, because less interrupted by lateral branch canyons.

The mystery of the Canyon of Chelly is now, in all probability solved. This canyon is, indeed, a wonderful exhibition of nature, and will always command the admiration of its votaries, as it will the attention of geologists. But the hitherto entertained notion that it contained a high insulated plateau fort near its mouth, to which Navahos resorted in times of danger, is exploded. That they may have had heights upon the side walls of the canyon, to scale which would require a series of *fourteen ladders,* is indeed probable; for it would require more than this number to surmount the height we measured.*

* *Simpson's Report.*

Like the treaties that preceded it, this one of Colonel Washington's was soon ignored and things went on from bad to worse until 1863, when General Carleton was sent to grapple with the problem. He called upon Kit Carson and the two solved it in stern, military fashion. The Navahos were rounded up, willy-nilly, and sent to Bosque Redondo, in New Mexico, and there kept until their spirit and insolence was crushed. In the expedition one of Kit Carson's officers made a complete trip through De Chelly, and from his report it is evident they were all alike (Carleton, Carson, and the rest) ignorant of Lieutenant Simpson's destruction of the fortress myth. But, although from that day nothing further has been heard of the Navahos' fort, it was left for the Bureau of American Ethnology to make an accurate, complete, and scientific survey of the canyon. In 1882-3, Colonel Stevenson and Cosmos Mindeleff studied it, and in 1895, in the *Sixteenth Annual Report,* the latter gives a detailed account which is reliable and standard.

While in the early days Canyon de Chelly was noted for its inaccessibility, times have materially changed it in this regard. The traveler from the southeast or west may ride in comfort in his Pullman on the main line of the Santa Fe to Gallup, New Mexico, and from there, in an automobile journey with ease, in good weather, to the mouth of the canyon. Those who come from the north merely travel a little further around, for the Denver and Rio Grande Railway connects with the Santa Fe at the old capital city of the same name, and thus Gallup is easily reached. On the other hand the automobile traveler merely prepares for extra sandy and rough roads, and pushes along.

At Chin Lee, where the United States Indian Department

has a school, two or three trading stores and the mission of the Franciscan Fathers is located, change should be made to wagon or horseback.

The main canyon is twenty miles long. It is known to the Navahos as *Tsé-gi.* It heads near Washington Pass, within a few miles of the crest of the Tunicha Mountains, and extends almost due west to the Chin Lee Valley.

About three miles from its mouth De Chelly is joined by another canyon, almost as long, which, heading also in the Tunicha mountains, comes in from the northeast. It is over fifteen miles long, and is called on the map Canyon del Muerto; the Navaho know it as *En-a-tsé-gi.* About thirteen miles above the mouth of the main canyon a small branch comes in from the southeast. It is about ten miles long, and has been called Monument Canyon, on account of the number of upright natural pinnacles of rock in it. In addition to those named, there are innumerable small branches, ranging in size from deep coves to real canyons a mile or two long. Outside of De Chelly, and independent of it, there is a little canyon about four miles long, called *Tse-on-i-tso-si* by the Navaho. At one point near its head it approaches so near to De Chelly that but a few feet of rock separate them.*

While perennial springs supply plenty of water to both Del Muerto and Chelly Canyons, the sand is so deep that only during the time of the autumn and winter rains and in the spring when the mountain snows are melting is there sufficient to enable it to flow to the mouth. The sands absorb it. But water can always be found by making a shallow hole in the sand. This is the method followed by the Navahos, who still reside in fairly large numbers in the main canyons and their larger branches.

At its mouth Chelly is about 500 feet wide, and while

* Mindeleff in the *Sixteenth Annual Report of the Bureau of Ethnology,* p. 85.

there is considerable variation all the way to the head, it preserves a fairly uniform width. In a few places it becomes as narrow as 300 feet. The walls are of a brilliant red sandstone, weather-streaked black and gray coming from above.

Both it and Del Muerto are winding and tortuous, and the latter is much narrower than De Chelly, there being places where one can almost throw a stone across it.

At the mouth the walls are not more than twenty to thirty feet high, descending vertically to a bed of loose white sand, and absolutely free from talus. This latter is a noticeable feature most of the way up the canyon, though there are places where masses occur, its absence doubtless being accounted for by disintegration and washing away by flood waters.

Del Muerto enters De Chelly through so narrow a pass, with walls over 200 feet high, that one might easily overlook the mouth and take it for an alcove. The ascent of the walls is so gradual that it is no wonder the ordinary observer is deceived by them and exaggerates their height. In my own case, as I drove along in the wagon generously loaned by my friends of the Franciscan Mission, and stretched out to sleep on the rocks at night by the side of my Navaho guide, I could well understand how J. H. Beadle, whose *Western Wilds* had always given me much pleasure, was led to his extravagant statements. He entered it from above, by Bat Canyon, and speaks of the first descent as 1,100 feet. Later he tells of cliff-dwellings 1,500 feet above the canyon bed, and perhaps three hundred feet below the summit. He thus describes a wonderful pinnacle or needle that stands out from the main cliff at the junction with Monument Canyon.

There is another on the other side, and the two have been named "The Captains." The height of the taller of the two has been variously estimated at from 1,200 to 2,500 feet. In reality it is less than 800. Beadle says:

> But the most remarkable and unaccountable feature of the locality is where the canyons meet. There stands out one hundred feet from the point, entirely isolated, a vast leaning rock tower at least 1,200 feet high and not over 200 thick at the base, as if it had originally been the sharp termination of the cliff and been broken off and shoved farther out. It almost seems that one must be mistaken, that it must have some connection with the cliff, until one goes around it and finds it 100 feet or more from the former. It leans at an angle from the perpendicular of at least fifteen degrees; and lying down at the base on the under side, by the best sighting I could make, it seemed to me that the opposite upper edge was directly over me — that is to say, mechanically speaking, its center of gravity barely falls within the base, and a heave of only a yard or two more would cause it to topple over.*

In Canyons de Chelly and Del Muerto a great number of cliff-dwellings and ruins of four general types have been found, the principal of which are known as the Casa Blanca, Antelope, and Mummy Cave ruins. They add great interest to a trip which is full of scenic and ethnologic wonder, though it is impossible here to do more than merely refer to their existence. To those who are interested in their study reference is made to Mindeleff's comprehensive monograph, and my own speedily forthcoming work, *The Prehistoric Cliff-Dwellings of the Southwest.*

* *The Undeveloped West, or Five Years in the Territories,* by J. H. Beadle, p. 552.

Courtesy of Santa Fe Ry. Co.

CANYON DE CHELLY MONUMENT

Courtesy of Santa Fe Ry. Co.

CANYON DE CHELLY, LOOKING EAST

CHAPTER VIII

THE NAVAHOS AND THEIR REMARKABLE FIRE DANCE

THE Navaho and the Apache are one and the same people, though so long separated and living apart that I suppose we should now call them cousins. They are the same fearless, warlike, independent race, proud and haughty, considering themselves, as their own name implies (*Déné*, the people), the most important people on the face of the earth. Just when they came into Arizona is not known. By language and customs they prove themselves to be allied to the great Athabascan family of the far-away North, in Alaska, and all their traditions attribute a northern origin to their ancestors.

When the Spaniards came, in the middle of the fifteenth century, they found the Navahos securely entrenched in their present locations. They had no villages, however, like the Pueblos, and were semi-nomads, hence they offered no strong inducements, as did the former, for active missionary work among them. They had no strong central organization, but were composed of bands, each in a measure under the control of a chief whose power was somewhat uncertain and temporary, for they were too independent to submit to a control they did not choose. Once in a while a few of these separate bands would unite for some definite object, as a great raid upon their enemies or a far-away hunt in a

hostile country, but there was no organized coherent federation amongst them, as was found among the Iroquois of the East when the white man first discovered them.

Their nomad character did not seem to be provocative of good habits, for they occasionally raided their Pueblo neighbors and stole from them all the corn, squash, melons, buckskin, and other treasures these home-loving people had stored away. It was such raids as this, rather than any relentless warfare, as we moderns understand the term, that led the ancestors of the present Pueblos to build their fortresses on the Verde, their cliff-dwellings that were hard to approach, and their vast community houses, where a whole people could rush for protection on the approach of danger.

When the Spaniards arrived with their flocks of sheep and goats, their horses and cows, their seeds of wheat, of peaches, etc., the Navahos were not long in learning the advantages of these new introductions. The newcomers were not many, and the Navahos could not understand how the Pueblos could so easily bow their necks to the yoke of the foreigner. They were patient enough until they learned the flavor of roast mutton, the value of a horse, mule, and burro as beasts of transportation and carriers of burdens, the wonderful addition to their weaving material for blankets the wool of the sheep afforded, and other things the Spaniards were glad to teach, and then their normal habits broke forth.

The Spaniard became the object of their raids, as well as Hopi, Zuni, and Acoma, and when the Spanish and Mexican colonists settled on lands they had for centuries regarded as their own, bitter hatred was added which gave an additional intensity and even ferocity to their attacks. The result was

Photo by Putnam & Valentine

NAVAHO BLANKET WEAVING

Copyright by George Wharton James and C. C. Pierce

A NAVAHO SUMMER HOGAN

that for over two hundred years, prior to the seizure of Arizona and New Mexico by the United States, the Navaho had been regarded as the scourge of the plains. He was the Ishmael of the desert; every man's hand was against him, and his against them. There is not a Mexican family in New Mexico or Arizona which dates back to "the days before the Gringo came," that had not lost one or several of its members in some conflict with these ever-ready foes. I could point out a score or more of Arizona landmarks which are reminders of bloody struggles between the advance guards of civilization and these aboriginal savages. Yet, according to their own standards, and even from ours, in many respects, they were a fine race. They were honest among themselves, chaste to a rare degree, though polygamous, industrious as far as they knew, fairly truthful, fond of their children, the most hospitable people in the world, and religious beyond the white man's conception.

It is very amusing to read, even in such learned publications as the reports of the Smithsonian Institution, some of the first estimates United States officers and others made of the Navaho. I could easily fill up this chapter with untruthful and foolish characterizations and silly guesswork that led to the loss of many a life, and cost hundreds of thousands of dollars to the United States government before we learned wisdom. The subject, however, is too large for more than a hint here. Suffice it to say that when General Kearny took possession of the land, in 1846, when war was declared against Mexico, we naturally inherited with the Mexicans and the Navahos the feuds that had existed for so many generations between them. Not understanding the situation, our government ordered its officers to make trea-

ties with the various Indian tribes, the Navahos among the number.

There can be no question but that the Navahos regarded this treaty-making as a weakness. Nor could they understand why the Americans should come and make war upon the Mexicans of New Mexico and yet refuse to allow them to continue their own warfare with them until they had evened up all scores. One of their chiefs thus addressed Colonel Doniphan, when, in November, 1846, he was concluding a treaty with them:

> Americans! You have a strange cause of war against the Navahos. We have waged war against the New Mexicans for several years. We have plundered their villages and killed many of their people, and made many prisoners. We had just cause for all this. *You* have lately commenced a war against the same people. You are powerful. You have great guns and many brave soldiers. You have therefore conquered them, the very thing we have been attempting to do for so many years. You now turn upon us for attempting to do what you have done yourselves. We cannot see why you have cause of quarrel with us for fighting the New Mexicans on the west, while you do the same thing on the east. Look how matters stand. This is *our war*. We have more right to complain of you for interfering in our war, than you have to quarrel with us for continuing a war we had begun long before you got here. If you will act justly, you will allow us to settle our own differences.

This, of course, our government could not do, so *we* became the object of the Navahos' vengeance as well as the Mexicans'. Yet the authorities demanded treaties rather than arrest and condign punishment of the offenders.

The Navahos had no objection. They knew nothing of the United States. They knew and cared less about treaties.

They merely saw another chance for more effective raids, and would leave the treaty tent to go and steal the very mules from under the noses of the soldiers who had stood by and heard their professions of friendship for the United States.

This aroused the ire of Uncle Sam, but he still counseled "treaty." It was about this time that rumors reached the ears of the Americans of the Canyon de Chelly, a wonderful, natural fortress of the Navahos, in the heart of their wild, barren, and inaccessible country; where they had constructed an absolutely impregnable fortress scores, hundreds of feet high. This canyon, with its companion gorges, forms the subject of the preceding chapter.

The United States soldiers soon exploded the idea of the "impregnable fortress," by marching through Canyon de Chelly. But, somehow, it persisted in the minds of the people of New Mexico, so long as the Navahos held their power and persisted in their noxious raids and secret murders. At last a genuine Indian fighter was put after them. This was in 1863. General Carleton had a different method of handling the Indians from that followed by his predecessors. He placed the redoubtable Kit Carson in charge of operations and bade him "round up" all the Navahos who did not come in and surrender. Kit did the work with frontiersman-like completeness. He wasted few words. Those Navahos who professed friendliness were required to come in within a certain length of time (a very short time) or they were treated as enemies. In a few months the arrogant, impudent, and overbearing attitude of the Navahos was completely crushed, their marauding ceased, and their raids a thing of the past. They had learned the power

of the United States and the severity of its punishment when it really meant business.

Since then the Navahos have been fairly well behaved, have prospered wonderfully in material things, and have increased and multiplied both in their flocks and herds as well as in their own population. They make annually from three-quarters of a million to a million dollars' worth of blankets; they ship hundreds of thousands of pounds of wool, pelts, and hides; their pinion nut crops are also valuable, and they trade with other tribes their sturdy little ponies for food, baskets, pottery, buckskin, and other aboriginal articles of commerce.

Yet in spite of their constant association with the white man they retain most (if not all) of their ancient rites and ceremonies — many, varied, complex, and wonderful.

For years it was thought that the Navahos had no religious ceremonies to amount to anything, for they were more shy, reserved, and self-contained than any others of the North American aborigines. Then it was found they had many ceremonies, the most marvelous of which is called the Mountain Chant. In this chant, which is a ceremony of many days' and nights' duration, the last night is devoted to a public performance of a variety of "acts." Early in the evening the first fire dance occurs, called the *Nahikai-alil,* which signifies "it becomes white again." Imagine a corral or enclosure, about 120 feet in diameter. In the center a great bonfire blazing and sparkling. Suddenly a dozen naked Navahos, their bodies painted white, so that they appear like living statues, march into the enclosure. Each carries in his hand a wand tipped with eagle down. After twice circling around the fire they begin to thrust

Courtesy of Bureau of American Ethnology

NAVAHO FIRE DANCE

Courtesy of Bureau of American Ethnology

CORRAL IN WHICH FIRE DANCE IS HELD

NAVAHO TYPES

their wands towards it with the clearly shown object of burning off the eagle down. Then, for half an hour or so, this object is pursued, the intense heat of the fire rendering it impossible to get near enough. But gradually working each other to a frenzy, the dancers get nearer and nearer until, at last, one, making a wild plunge and gliding forward on his body, succeeds in setting his plume on fire. Frantically the others plunge nearer and one after the other accomplishes the same result.

Now, with yells and cries, each seeks to attract the attention of the onlookers, and by pretended occult or mysterious powers brings back the burned off plume, making it "become white again"—hence the name of the dance.

Following this, exhibitions of arrow-swallowing, Katchina dancing, feather conjuring, and the making of a yucca grow fill up the night until as dawn approaches there comes the great Fire Dance. The naked dancers, whitewashed, appear again, each man carrying in his hands a bunch of shredded cedar bark. After four times dancing around the fire, waving their bark towards it, the leader sets his bunch on fire and all his followers do the same. Now follows a scene that beggars description. Rushing wildly after each other around the fire, the rapid racing causes the brands to throw out long brilliant streamers or banners of flame over the arms and bodies of the participants, and reaching to the one next behind. Then, with wild, piercing yells, each one seeks to catch the man ahead of him and sponge him down with the flaming brands. No man ever turns around to see what is being done to him, but vigorously rubs the flame onto the man ahead, occasionally giving him vigorous blows with the flaming bark. If a dancer stands alone he sponges himself

up and down until he is able to catch up with the man ahead. When the bark is so far consumed that it can be no longer held the dancer drops it and retires from the corral. Thus, one by one, they all depart, when the Navaho spectators step up, pick up the still smouldering fragments, and rub their hands with them. This is supposed to be a great charm, especially against the evil effects of fire.

While the description above given is brief, it must not be supposed the ceremony is over speedily. It takes a long time. It is fully described in the *Fifth Report of the Bureau of American Ethnology,* and ranks with the Hopi Snake Dance as one of the most thrilling aboriginal ceremonies known to the white race.

CHAPTER IX

THE TERRACED HOUSES OF THE RIO GRANDE

THESE have been somewhat referred to in the chapters on Taos, Zuni, Acoma, and Hopi, but this book would be incomplete did it not suggest the great pleasure that may be derived from a visit to all the pueblos of the Rio Grande and its tributaries. One can get good tastes of these without leaving the main line of the Santa Fe, as, for instance, at Santo Domingo, a few miles east of Albuquerque; Isleta, twelve and one-half miles to the west, and at Laguna.

At the first named, however, the casual traveler will not be welcomed. All the shy, haughty, and determined reserve of the centuries seems to be enshrined in these people, and they plainly show they not only do not want visitors, but will do all they can to discourage them.

But at Isleta it is quite different; there as a rule one is welcomed.

No person merely passing by, or through, this Indian pueblo could conceive the many wonderful things that exist within those rude adobe walls. Here is a republic as perfect in constitution and government as our own boasted national political establishment. A governor, lieutenant-governor, sheriff, assistant sheriff, secretary of war, and a board of *principales* control the destinies of the little town, where 1,200 human beings dwell in peace, industry, and

domestic happiness. They are citizens of the United States, according to the treaty of Guadalupe Hidalgo, made between our government and Mexico, but they have never exercised their privileges, and possibly would not be allowed to if they were to try, yet they understand popular government, and were old in its usages before our government was dreamed of; aye, before the ship of Leif Ericsson was landed on the shores of this continent, or Columbus was born. And they have never heard of, nor in their simple honesty, conceived of, Tammany Halls, convention bosses, wire-pullings, fixing of voters, malfeasance in office, political bribery and corruption; or such principles as "to the victors belong the spoils."

Isleta is a picturesque little town, but it is only after a study of its people that the full charm of the place is revealed. The customs of the Indians are so simple and quaint, and yet so full of meaning, that one is fascinated more and more as he becomes acquainted with them. I was present at the funeral of an old Indian woman who had died quite suddenly on one of the *fiesta* days. The bell tolled. Then the old sacristan left the church, and, carrying a large gilded cross, followed the priest in his sacred robes, with candle-bearer, and others who carried a canvas-cot bier to the house of the dead.

The secret ceremonies of the tribe, to which no white stranger is admitted, had already taken place within.

Soon loud wailing was heard, and the procession, considerably augmented, left the house and crossed the plaza on its way to the churchyard. On the bier was the body of the dead woman, robed in her ordinary dress, with face exposed. Her family and friends followed, weeping and crying pit-

eously. After a brief ceremony in the church and at the graveside, the body was lowered into the earth, and the mourners, seizing the shovels, began to throw the loose dirt upon the body and uncovered face. In her fingers was placed a prayer-stick to keep away the evil spirits.

And there she must remain, not to be visited again until *La Fiesta de los Muertos* — the day of the feast of the dead. This occurs but once a year, and is a sight to be witnessed. After the ringing of the bell, the women march into the churchyard, bearing upon their heads baskets filled with such food as the deceased loved. Placing the baskets upon the graves, they light candles and stand them around the baskets, kneeling reverently and patiently at prayer, while the dead one is supposed to feast upon the provisions. Tears furtively stream down the cheeks of each mourner as she recalls the virtues and affection of the deceased, for one of the marked traits of the Indian character is their intense devotion to each other.

In the church the same proceedings are transpiring, for many have been buried in those time-honored walls. Now the priest enters, and in an impressive manner recites the office of the mass for the dead, then the sacristan, carrying the bowl of holy water, the blessing of the graves is given, and the needed sprinkling with the *agua bendita*. As each grave is blessed and duly sprinkled the patient kneeler arises and carries her basket away. The dead have had their feast, and now it is the padre's turn, for, all that is left is taken to his storeroom as his perquisite. And none but these simple-minded Indians can see that there is not a particle of food the less in the basket, after the dead have taken their fill. But they are satisfied, and returning

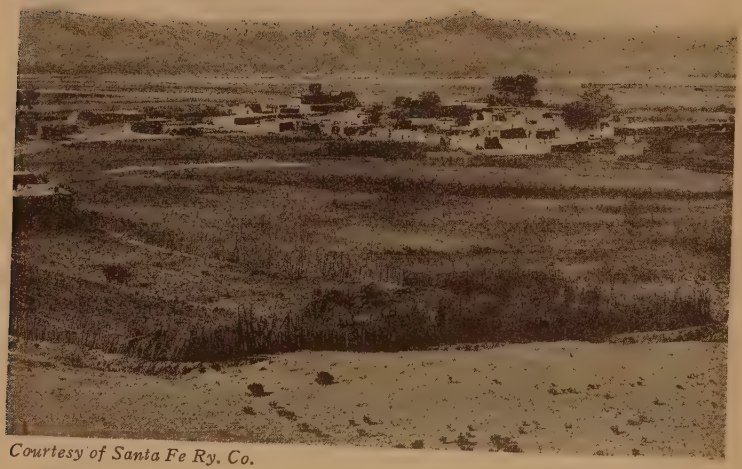
to their homes they leave the dead in peace and fasting for another year.

The Isletans own patented lands to the extent of over a hundred and fifteen thousand acres, and their gardens, vineyards, orchards, alfalfa fields, and pastures, all well-irrigated and thoroughly cultivated, demonstrate agricultural and horticultural ability equal to, and often surpassing, that of more pretentious, because "civilized," farmers and gardeners. They now ship fruit — peaches, apricots, melons, and grapes — to points as far west as the Needles, and to Las Vegas and beyond, in the East. Nor did they learn these things from us. We cannot lay that flattering unction to our souls. They tilled the soil, irrigated their farms, built their three, four, and six-storied houses, governed themselves truly as republics, made their own clothes — modest, neat, and picturesque — made glazed pottery and constructed their own implements and furniture, before ever our ancestors had dreamed of their existence.

Laguna is the second pueblo of importance west of Albuquerque, reached by the Santa Fe. It is perched on a slight sandstone eminence overlooking the San José River, and between this knoll and the stream curves the railway track, directly under the shadow of some of the houses. These are generally of one story, though there are some of two or three stories. A striking house, seen from the station, is that of Paisano, the Governor. It is a large building of stone and adobe, whitewashed, and fronted with a "portico," the columns being of barked juniper trunks. Being somewhat progressive, Paisano has added doors to his house, windows of glass, and a modern cookstove. The governor stands midway between those who might be

Courtesy of Denver & Rio Grande R. R.

INDIAN PUEBLO OF SANTA CLARA, NEW MEXICO



Courtesy of Santa Fe Ry. Co.

SAN ILDEFONSO, NEW MEXICO

Copyright by George Wharton James

PUEBLO FUNERAL PROCESSION

termed the conservatives — those who do not wish to forsake the ancient customs — and the radicals, those who are desirous of emulating all that is good in the white man. For these two classes are far more distinctly marked than one would conceive, and there is much enmity manifested toward those who are too progressive in spirit. Still, Laguna, being on the line of the railway, and its citizens having for many years been in contact with three cultured and educated Americans who have lived and intermarried with them, and many of the children having attended school at Albuquerque and Carlisle, as well as the Government School in their own pueblo, it is a much more modernized town than any other that is found anywhere near the line of the railroad.

If one is fortunate enough to be present at the *Pahs-cotz-e* or Corn Dance of the tribe, which occurs in September, he will see a sight he never dreamed of. The housetops, overlooking the dance-plaza, are crowded with spectators decked out in all their most gorgeous and brilliant finery. Beneath, are thirty or forty men, besmeared with red and other pigments, half-naked and crowned with a plume of eagle feathers. Up and down, to and fro, they hop, wheeling and marching to the music of a vocal chorus aided by several *tombés,* or drums, whose monotonous tom, tom, strikes the ear in strange contrast to the ever-changing sight that meets the eye.

Laguna was founded by refugees from Acoma and three other pueblos in 1699, and is therefore over 200 years old. It was the latest of the pueblos to be founded.

On the Rio Grande there are several pueblos, including Tesuque, nine miles from the city of Santa Fe; Santa Ana,

Sia, and Jemez, reached from Bernalillo, on the Santa Fe line; Nambé, nineteen miles; Pojuaque, five miles beyond Nambé, and now abandoned; San Ildefonso; San Juan; Santa Clara, and Picurís. Several of these have been described and their environment vividly pictured in Marah Ellis Ryan's novel, *The Flute of the Gods.* By reading this fascinating story one can learn much of the inwardness of Indian thought and religion, and also of their history since the coming of the Spaniards. Other interesting books are Lummis's *The Land of Poco Tiempo,* and Charles Francis Saunders's *Indians of the Terraced Houses;* while in Mrs. Matilda Coxe Stevenson's masterly and scientific story, *The Sia,* to be found in the *Twelfth Annual Report of the Bureau of American Ethnology,* one sees their daily life as vividly as though one were actually living next door neighbor to them.

CHAPTER X

BY THE ENCHANTED MESA TO THE CITY OF THE SKY

A FEW hours' ride past Albuquerque, New Mexico, on the main line of the Santa Fe Railway, one reaches Laguna Indian pueblo. Making this his point of departure, one may travel south into a land of enchantment, a veritable land of wizardry and necromancy; a land where rocks and sand and trees and sky play such tricks upon the mind as imagination has never before conjured up; and, also, a land where the inhabitants believe as thoroughly in witches and charms, and are as afraid and terrified by them as children who see "bogies" in the dark.

Crossing the little creek of San José, passing over, by, and around sandhills, a splendid valley is soon reached which is a revelation of glory and splendor seldom seen. Vast tablelands of solid rock, with precipitous walls of creamy, pink, and brick-red sandstone, rise on either hand, crowned with dark-green forests of pine, pinion, and juniper. Directly ahead, almost sheer in one's path, is a sublime mass of rock, a perfect island, rudely triangular, the base of the triangle facing the visitor, rising over 400 feet in sheer, precipitous height. There are towers, peaks, minarets, castles, and other bizarre forms, some of gigantic size, on the walls all around, due to the differential erosion of the varying densities of sandstone.

Three miles further on is the present-day site of Acoma, the City of the Sky, where these aboriginal people have lived in historic times, ever since the conquistadores found them there nearly 400 years ago. But, according to their traditions, handed down from father to son, mother to daughter, through the ages, time was when their ancestors lived upon this other mass of rock, which they called *Katzimo,* the accursed; or, as the American recorder of the tradition, Charles F. Lummis, termed it, *The Enchanted Mesa.* According to the story, the heights were reached from below by an immense shaft or sliver of rock that, during some convulsion, or through other natural causes, had become detached from the face of the cliff, its base resting in the sandy bed which surrounded the mesa, and its pinnacle at the foot of a rude "chute" or narrow groove of erosion which sloped up to the mesa top. In this groove the Indians had cut foot and hand holes leading to the rock shaft, upon which they had continued their rude and primitive ladder down to the valley. The agricultural fields of the Acomese were at Acomita, a few miles away, where water from San José Creek was available for irrigation purposes, and they were wont to go down *en masse* at the bidding of their Governor to do the necessary field work. On one occasion the herald called them to this service and all went, save two sick women and two lads who were left to care for them. In their absence a torrential storm arose which so flooded the valley that the sand was washed away from the base of the rock and it fell with a terrific crash, thus severing all connection between the people below and their homes above. The ascent was made impossible, and alas, also, the descent of the helpless ones above was forbid-

den, and in the agony of the few ensuing days those below suffered the torture of knowing that their loved and helpless ones above were slowly but surely starving to death.

Sadly and reluctantly they left the accursed place, and ever after referred to their former home as *Katzimo,* in due time establishing their pueblo upon the present site.

While somewhat out of the course of my purpose, it will throw added interest around Katzimo here to relate in brief a great discussion that arose about it some twenty years or so ago. In relating the tradition, Mr. Lummis guessed the height of the mesa at 1,000 feet* and stated that it was proven to be practically inaccessible save by the flying bird. Taking this statement at its face value, Professor William Libbey, holding the chair of geography at Princeton University, decided to make the attempt to scale it with a life-saving apparatus and a boatswain's chair. Securing the loan of these appliances from officials of the Federal Government, he shipped them out to Laguna, secured assistance, and hied himself to Katzimo. Unfortunately for him, a newspaper man of the "yellow journal" type attached himself to the party. Arrived at the foot of the mesa, a rope was shot over it by means of cannon. By this rope stronger tackle was hoisted to which was attached a life-saving chair used to convey passengers on a wrecked vessel to the coast. A cursory survey of the summit revealed no ruins of houses, no remnants of mortars or appliances of any kind — though Professor Libbey did state, afterwards, that he found, or saw, a few small potsherds and other evidences of human presence. These, however, were

*Major Pradt, the engineer, who later made the ascent with Professor Hodges, found it to be 431 feet.

not deemed by him of sufficient importance to signify, hence he expressed his doubt as to the authenticity of the tradition. This doubt was put into a most positive avowal of disbelief in the press dispatch that the newspaper man hastened to send all over the country.

Mr. Lummis is essentially a fighter, and this dispatch aroused his keenest ire. A controversy was started which raged with angry fierceness and into which Professor F. W. Hodge, the accomplished ethnologist, and now head of the Federal Bureau of American Ethnology, and myself were both drawn, he siding with Mr. Lummis, and I with Professor Libbey. Of course, with Hodge's authoritative backing, the other side doubtless regarded itself as unquestioned victor, but we are still unconvinced.

So the visitor may gaze longingly upon the mesa cliff and summit above and take sides as his inclination dictates.

The present-day site of Acoma certainly is one of the most picturesque of any city in the world. At first sight the cliff walls seem as inaccessible and inhospitable as those of Katzimo. One might circle the mesa in the dusk of evening and never see the two generally used trails — one for horses, the other cut into the face of the cliff, where a convenient rift or crack offers friendly assistance for the laying of tree trunks and rocks as steps. There are two other trails, however, one on the opposite side, caused by drifted sand piled up almost to the very top, and the other a trail cut in a cleft, which few white men have ever seen.

It was in 1540 that Coronado and his conquistadores first visited Acoma. Fifty years later these simple and free sons of the City of the Sky swore themselves actual vassals to the Crown of Spain, under Juan de Oñate. But this aroused

INDIAN PUEBLO OF LAGUNA, NEW MEXICO

STREET IN THE PUEBLO OF ACOMA, NEW MEXICO

THE ENCHANTED MESA

FROM THE TOP OF THE TRAIL AT ACOMA, NEW MEXICO

DRIFTED SAND, ACOMA, NEW MEXICO

the fierce enmity and patriotism of one of the Acomese, and he tried to prevail upon the warriors to open resistance. Calmer and quieter counsels prevailed, and the oaths of fealty were taken.

This leader, Zutucapan, however, was not to be denied, and he persuaded twelve warriors to unite with him in a secret plot to kill the hated Castillo. These twelve were to hide in a *kiva,* and Zutucapan was to so ingratiate himself with Oñate that when he asked him to descend the *kiva* the latter would do so without thought of fear or suspicion. Then he was to be slain, and, naturally, the whole of the people would be embroiled in war and compelled to defend themselves against an exasperated and infuriated foe.

But Zutucapan failed. Some intuitive sense seems to have warned Oñate. Without any conscious recognition of danger he refused to accept the wily chief's invitation, and thus his life was saved.

On November 18, however, the ever-alert patriots succeeded, though not with Oñate. The latter's chief officer, Don Juan Zaldívar, was passing by Acoma on his way to unite with his general for a march to the South Sea [the Pacific]. The people came out with presents and profuse professions of loyalty and friendship. On being asked for supplies they offered to give all that were needed, and totally unsuspicious that any treachery was intended, Don Juan sent his soldiers to different parts of the pueblo to gather the provisions. While the force was thus scattered the order to attack was given, and the Indians fell to, with hardy lustiness, upon their hated foes. For three hours the fight raged, thirty Spaniards or less against the whole of the inhabitants of Acoma, for even the women joined in

the fight, or at least beat the *tombés,* and urged on their spouses and sons to greater deeds of valor.

Though armed with the best of Spanish weapons, fighting against a savage foe the odds were too great and one by one the devoted band fell. At length Zaldívar himself was slain by the heavy war club of the fierce Zutucapan, and seeing the officer killed the Acomese shrieked their cry of victory. Disheartened and realizing the futility of further fight, the five remaining warriors sprang over the fearful precipice to the plain below, and providentially four of them escaped with their lives, reached the horses, and dashed off to give warning to the missionaries at other pueblos of the uprising. One man rode in desperate haste after Oñate, and the heart-broken remainder returned to tell the sad tidings of their defeat to the wives, children, and friends of the slaughtered men.

After due consideration it was resolved forthwith to visit condign punishment upon the rebels — as they were termed. The murdered captain's brother, Vicente, was put in command of seventy men and sent forth to subjugate the Acomese and bring them to their senses. The peaceably inclined chiefs had counseled the removal of the women and children from Acoma, but the party of Zutucapan was in the ascendancy, and when the devoted seventy arrived on their mission of vengeance they were greeted with fierce yells, taunts, and insults.

After a night spent in wild and frenzied dancing by the Indians above, and by the Spaniards in preparation and rest below, the morning dawned ready for the attack. Don Vicente knew there were two trails up which he could ascend. Under cover of night he had accompanied twelve

of his men to the more hidden trail, while the main body — apparently the whole force — marched at dawn to the other. The ruse worked perfectly. Every savage warrior on the penyol height rushed to the defense of the main trail. Vicente and his gallant twelve ascended in safety and, forcing their way in, divided the fight. All day the battle raged, and when night-time came neither Spaniards nor Acomese would allow themselves to rest. Another day and part of a third were spent in the most desperate struggle. The Spaniards knew they were not only fighting for their own lives but for the success of the whole enterprise. Failure to them meant the abandonment of the conquest, at least under Oñate's auspices. They were inured to fiercest hardships, and prepared as only such men could be for the terrible strain of continuous fighting. Nerves tenser than finest steel, muscles more elastic than a rubber ball — the whole physical frame hardened to endure the severest strains, and knowing it would mean death in its worst forms, followed by mutilations too horrible to contemplate, unless they were successful, this brave band of seventy was there to conquer. Back and forth the forces swayed, now one, now the other, gaining a little, only to lose it by a fierce and more vigorous onslaught. Imagine the scene. Dusky warriors, nearly naked, but painted red and yellow and made generally hideous with feathers and other savage accouterments, shouting, yelling, screaming, and raging, while attacking with heavy stone axes, hammers and flint knives, spears and arrows. Urging them on, aiding them, carrying weapons and occasionally using them, naked women, fiercer and wilder than the men, more vociferous in their yells and screams, more terrible in their savage

denunciations and imprecations upon the hated white intruders than were the men, made the conflict even more terrible.

At last discipline, training and the weapons of civilization triumphed, and the bloody conflict was at an end. How many Indians were slain is not definitely known. Authorities differ, some saying there were 3,000, some 6,000, Acomese, when the battle began, but all agree that there were only 600 left at the close of this desperate three days' fighting.

Rather than be captured by the Spaniards hundreds hurled themselves headlong to the rocks beneath, scores deliberately perished in the flames of the burning houses, and many besought their friends to slay them, which they did.

History like this makes any place interesting, but especially one so picturesque and attractively located as Acoma. The desperate bravery of its people and their genuine patriotism and determination to expel the invader were worthy a better fate.

But Acoma is not all history by any means. Here is scenery, grand, glorious, inspirational. It is a place of wonders, where Nature has craftily and cunningly worked to produce surprises. Great detached pillars of rock, a hundred, two, three hundred feet high; a marvelous natural bridge, where the arch of the curve is as perfect as if done by a mechanical contrivance; grotesque and startling figures that might be gargoyles on a Gargantuan temple; buttresses immeasurably more grand, colossal, and majestic than those of the rock-hewn temples of far-away Abyssinia —all are here, carved by wind and storm, sand and rain.

The horse trail leading up to the mesa top is a wonder in itself. Built up many feet in two or three places, the steps cut out of the solid rock in others, it is overtopped with two stupendously massive monuments that the Indians believe were created by the gods. They have many legends about these and other natural objects around the mesa, and happy is that visitor who can succeed in obtaining an old Indian willing to recite these "stories of the old," with a younger Indian intelligent and honest enough properly to interpret them.

Then, too, the Acomese preserve many of their ancient dances and other ceremonies, which they give in accordance with their ancient calendar, though since the advent of the Franciscan friars these are all more or less tinged with the outer ritualism of Catholicism.

Their patron saint is San Esteban (St. Stephen); so on his day, September 3, a series of ceremonials, the like of which it would be hard to find elsewhere, are seriously and earnestly performed. They are a strange mixture of Christian ritual and pagan dance. Worship of the sun, recital of the prayers of the Catholic church, and invocations, singing to and propitiation of "Those Above," are singularly commingled. The priest celebrates mass, in which caciques, pueblo governor, council, and people all partake. To me a most affecting part of the ceremonials is the singing in the ancient church by the oldest men of the pueblo, of hymns undoubtedly taught to them when children by the Spanish priests, or by their parents, who had learned them from these devoted missionaries.

Now and again one may see a dramatic representation of the coming of Saint James to Spain, a method of teach-

ing history the priests found well adapted to the mentality of the Indians.

When this historic representation is given, the Acomas assemble on horseback at the foot of the mesa and look earnestly and intently along the dim road, as if in eager expectancy of soon seeing some one appear. After a long delay a man is seen apparently riding a diminutive horse, and accompanied by two men on foot. At his approach the excitement is intense. Songs are vociferously sung, the *tombé* is loudly beaten, the church bells ring, and every man, woman, and child in the village assembles at the head of the trail to witness the triumphant incoming of the stranger. We join the throng, and as the horseman slowly ascends the trail the queer pranks and capers of the horse are most astonishing, and we cannot understand them till, on closer proximity, we discover that what we took for a horse is a clever dummy fastened to the body of the man who represents St. James, and that the peculiar movements are made by the man himself.

The following day high mass is celebrated in the church, St. James on his horse and all the village being present.

Then follows the procession. It is similar to processions everywhere, except that here the priest, Mexicans, and Indians, all take part, and each does his own work in his own way, and thus adds considerably to the general interest.

A large cross, carried by one of the leading functionaries of the village, went ahead, followed by the governor, the caciques, the *principales,* and the "city council." Then, under a small canopy carried by four swart Indians, was borne the wooden statue of St. Stephen, followed by the

padre, in full canonicals, and devoutly reading his ritual. Close at his heels came a chorus of forty or fifty men, the "drum corps," and then the men, women, and children. They paraded the whole town and, as the Mexican contingent joined them, one of their number bearing an accordion took his position by the side of the governor and began to play. Imagine my surprise to hear the strains of *Marching Through Georgia,* and finally, when a most solemn dirge was being rendered by the chorus, to hear it relieved by the touching ballad, played in most pathetic strains on the accordion, *After the Ball Is Over.* The parade completed, the wooden image of St. Stephen was deposited in the *kisi,* a small booth of cottonwood boughs, in which was a kind of rude altar and a bench on each side. Two guards, armed with Winchester rifles, stood one on each side of the entrance to the *kisi,* and the governor and *principales* took seats on the benches. Then, during the day, the devout Indians brought their thank offerings of melons, meal, corn, etc., and paid their devotions, kneeling before the image.

Then the dances began. Two of the secret societies of the village took part in these ceremonies, and as soon as one society tired, or had completed its portion of the dance, the other advanced. The dances took place in the main street in front of the *kisi,* the chorus standing opposite, so that the dancers paraded up and down between the singers and the sacred bower. And who can adequately describe an Indian dance? The men wore a kilt, or apron, reaching from loin to knees, embroidered and fringed garters, and moccasins. Dependent from the loins at the back was the skin of the silver-gray fox, and around both arms

above the elbow were tied twigs of juniper or pine. In the left hand more twigs were held, while in the right hand was the whitewashed gourd rattle used in all ceremonial dances. Around each forehead was the inevitable handkerchief, and nearly all wore a shell and turquoise necklace. Their bodies and legs were perfectly nude, painted as usual with an oxide of iron. The women, on the other hand, were bedecked with all the gorgeous finery which they could muster. *Jotsitz* (robe), girdle, moccasins, leggings, necklaces, etc., that were too good for common use, or were especially made for this great occasion, were donned, and in addition, a peculiar symbolic headdress made of board or rawhide, upon which figures representing the *katchinas,* or lesser divinities, were painted. To and fro they danced, the men two together, giving the singular hippety-hop movement peculiar to Indian dances, and shaking their rattles, the women, likewise in twos, following in alternate order, gently waving the bunches of wild flowers they held in their hands, and shuffling forward with their feet as the men hopped.

On the other side of the street stood the drums and the chorus, the leader occasionally making gestures, all of which were imitated by the singers — expressive of their thankfulness and invocation to "Those Above."

No one will visit Acoma without seeing the old church. It was built twenty years after the destruction of its predecessor in the Great Rebellion, and though now in a ruined condition, is a most remarkable edifice. It covers more ground with its accompanying buildings than any modern cathedral in the United States, and its graveyard is built up at one end by a wall over forty feet high, and the whole

Copyright by George Wharton James

THE ROCK OF ACOMA, NEW MEXICO

Photo by author

WALL OF DEFENSE, ACOMA, NEW MEXICO

area filled in with earth carried up in blankets by the women from the valley beneath.

The Indians have dug a channel down the center of the church. It is to let the rain flow out after a storm, for the roof leaks sadly. "You see, it is so much easier to do this than to put on a new roof," explained the governor, when I asked him what the channel was for. Four adobe steps which reach across the whole width of the church lead up to the altar, which is also of adobe. The adornments behind the altar are a fearful and wonderful combination of carving and coloring. In the place of honor is a quaint and peculiar little wooden figure, representing St. Stephen, although many have thought because the church was dedicated to St. Joseph he, and not Stephen, was the patron saint of the Acomese.

On the wall to the left hang two pictures. One of these is the celebrated painting of St. Joseph, which was probably given to the Acomese by Charles II of Spain, and was the occasion of such quarrels between the Acomese and the Lagunas, that ultimately the Supreme Court of New Mexico was called upon to settle the ownership. Judge Kirby Benedict, acting as chancellor, decided in favor of the Acomese. The case was appealed and the supreme judge affirmed the chancellor's decision, and added:

> The history of this painting, its obscure origin, its age, and the fierce contests which these two Indian pueblos have carried on, bespeak the inappreciable value which is placed upon it. The intrinsic value of the oil, paint, and cloth by which San José is represented to the senses, it has been admitted in argument, would not exceed twenty-five cents; but this seemingly worthless painting has well nigh cost these two pueblos a bloody and cruel struggle, and had it not been for weakness

on the part of one of the pueblos, its history might have been written in blood. . . . One witness swore that unless San José is in Acoma, the people cannot prevail with God. All these supposed virtues and attributes pertaining to this saint, and the belief that the throne of God can be successfully approached only through him, have contributed to make this a case of deep interest, involving a portraiture of the feelings, passions, and character of these peculiar people.

But Acoma is too interesting to be wholly described in a few pages. That the intelligent traveler in the United States should make this a part of his itinerary there can be no question, though, as yet, it is somewhat difficult to secure accommodations.

The best plan is to write to the Santa Fe Passenger Department, Railway Exchange Building, Chicago, for information, and then to Mr. Robert Marmon, Laguna, New Mexico, to see if he will provide accommodations, and take or send the prospective tourist to Acoma.

For literature he should read *Strange Corners of Our Country, The Spanish Pioneers,* and *The Land of Poco Tiempo,* all by Charles F. Lummis.

CHAPTER XI

OVER THE PAINTED DESERT TO THE HOPI SNAKE DANCE

THIS is a camping-out trip. There is no other way to make it. It is over a hot and sandy desert, with the likelihood of sandstorms or rainstorms at any hour — that is, if one goes at the time the Snake Dance is to be performed. One has to cross the Little Colorado River, which sometimes rises six to ten feet overnight; there are no accommodations (in the sense that the American tourist regards the term); bedding, provisions, and feed for the horses must be taken along; and yet, in spite of these many disadvantages and discomforts, each year sees an increasing crowd cross the desert, from every quarter, in order to be present at the culminating ceremonies of the Hopis' prayer for rain, known as the Snake Dance. And though I myself have taken the refined and cultured city dwellers, women as well as men, even society dames used to all the luxuries that our sybaritic life affords, I have yet to hear one who did not say that this was the most memorable trip of a lifetime, and so far counterbalanced the hardships and discomforts as to render them inconsequential.

The old Spaniards who first saw our great western land certainly were poets as well as explorers and soldiers. Their names were full of a rich poetry. Think of calling this wild land of color *La Desierto Pintado* — the Painted

Desert. Yet that is exactly what it is. A vast palette board, on which vast and heroic tubes of color have been squeezed in prodigal profusion, and then spread over the landscape with a lavish hand. Here, too, are gloriously impressive mountains, crowned with the snows of blessing, and bathed in a wealth of glowing colors, changing hues, and tender tints that few have ever seen. Yonder is a natural inkstand, larger than a tall New York skyscraper, from which, centuries ago, flowed fiery, inky lava, which has now solidified in dense blackness over scores of miles of surrounding country. Hemming it in, stand mountain-high plateaus, edged with bluffs, cliffs, and escarpments that delight the eye with their richness of coloring and wondrous variety of outline, and thrill with horror those who unexpectedly come upon their brinks.

It is a land of fantastic carvings and rudely sculptured images, where water, wind, storm, sand, frost, heat, atmosphere, and other agencies, unguided and uncontrolled by man, have combined to make figures more striking, more real, more picturesque, more ugly, more beautiful, and more fantastic than those of the angels, devils, saints, and sinners that crown and adorn the ancient pagan shrines of the Orient, and the modern Christian shrines of the Occident.

Here sand mountains, yielding alike to the fierce winds of winter and the gentle breezes of summer, slowly travel from place to place, irresistibly controlling fresh sites and burying all that obstructs their path.

Once there were vast lakes, in some portions of it, in which disported ugly monsters, and on the surface of which swam mighty fish-birds who gazed with curious wonder upon the enormous reptiles, birds, and animals which came

to lave themselves in the cooling waters. Now lakes, fishes, reptiles, birds, and animals of that epoch have entirely disappeared. Where placid lakes once were lashed into fury by angry winds are now only sand wastes and water-worn rocks where the winds howl and shriek and rave and mourn the loss of the waters with which they used to sport; and the only reminders of the prehistoric fishes and reptiles are found in decaying bones or fossilized remains deep imbedded in the strata of the uncounted years.

It is a land where at one time volcanic fires and fierce lava flows, accompanied by deadly fumes, noxious gases, and burning flames, have made lurid the midnight skies and driven happy people from their peaceful homes. Yet, today, a mighty river roars madly in its confined passageway to the sea, and like a vampire drains the whole country through which it passes; for, a few miles away from its brink, a spring that flows a few buckets of water in an hour is an inestimable treasure. In actual sight of this river thirsty men have hurled themselves headlong down thousand-feet-high precipices, crazy in their uncontrollable desire to reach the precious and inaccessible stream.

Hence it is a desert, indeed, and yet in spots it is marvelously fertile, for there are rich and luxurious valleys, wooded slopes, and garden patches that yield abundantly of fruit, vegetables, flowers, and trees.

Here, in its very heart, on three high mesas, or tablelands of rock, which are thrust out like fingers of a misshapen and mutilated hand, dwell the Hopi Indians — the *Hopituh Shinumo* — the People of Peace. The mesas, rudely speaking, are ten miles apart, and they are commonly spoken of as the Eastern, Middle, and Western Mesas; or,

counting from the east, the first, second, and third. They are from 500 to 800 feet above the sandy desert beneath, where, in the washes, or where there is enough subterranean water for irrigation, the Hopis have planted out their small patches of corn, which they cultivate and care for with pathetic eagerness and watchfulness.

While their home locations are strikingly picturesque, their architecture interesting, their social customs simple and archaic, it is undoubtedly their wonderful religious ceremonial, known as the Snake Dance, that has made the Hopi people famous throughout the modern world. Like all the Pueblo people, the Hopis are essentially religious. Half of their lives are spent in propitiating their diverse pantheon of gods, half-gods, and mythical beings, whose influence upon their lives they deem to be most potent. Dancing is one form of propitiating these superior beings. Smoking is another. Prayer still another, and singing combines with dancing, smoking, and prayer to make the petitions offered more effective. The result is that the Hopis have a calendar of ceremonies of such extent as to almost make one gasp. From four to sixteen days of every month are employed by some clan or other — day and night, continuously — in these ceremonies, each of which has a distinct significance, as is demanded by the "gods" for certain favors to be bestowed, the control of certain powers that show malignity, or the like.

The Snake Dance is by far the most famous of these ceremonies, though by no means the most beautiful and attractive. It has been called by a large assortment of adjectives, many of which are untrue and unjust. The dance has been characterized as "a wild orgy of disgusting

Photo by author

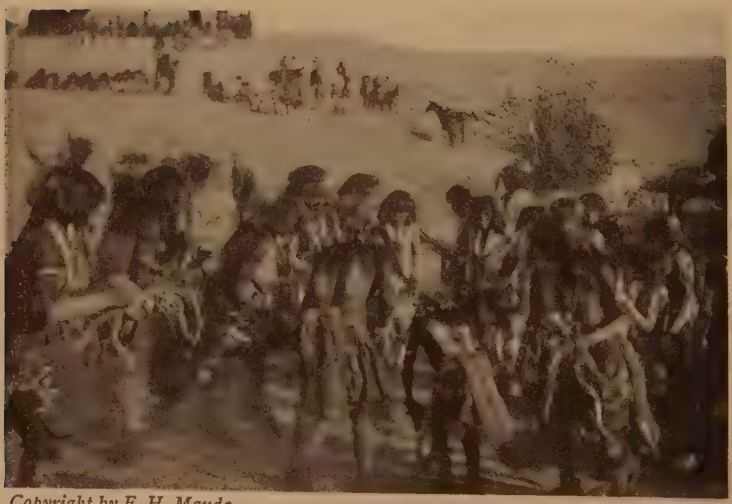
HOPI PUEBLO OF WALPI, ARIZONA

Photo by A. C. Vroman

ARCHWAY IN HOPI PUEBLO

Photo by author

HOPI PUEBLO OF ORAIBI, ARIZONA



Copyright by F. H. Maude

MOKI SNAKE DANCE

savagery," but the fact is that, from beginning to end, it is conducted with a gravity, a calmness, a solemnity, a dignity that is not surpassed by any religious ceremony of any church of the modern civilized world. Of course it is barbaric, and its strange and singular elements make it a wildly superstitious rite, but when one reasonably understands the legends upon which it is based it becomes a very different thing from that which it appears to the mere observer who sees it for the first time.

The Snake Dance proper, namely, that part of the ceremonies witnessed by outsiders, lasts less than an hour on the close of nine days of secret ritual performed in the underground *kiva*. Whenever ceremonies are about to be observed in the *kivas* certain symbols are hung upon the ladder poles to denote the fact, and woe to any person who dares intrude, even so far as to put his foot upon the roof of the sacred place, after the *natchi* has been hung.

In this, as in several other Hopi rites, two clans participate. These are the clan or family of the Antelopes, and those of the Snakes. While these are but the names of families, their clanship and the esoteric rites committed to their care, in time develops a kind of secret "order" which has led many writers to refer to them as "fraternities," after the style of our Masons, Oddfellows, Knights of Pythias, etc. This is an error. The term clan is the better one, perhaps, to use.

The date of the dance is not determined without great ceremonial. First the chief priest of the Antelopes orders the public crier or herald to announce, eight days ahead, that the date is fixed. To the strange visitor this is one of the things that strikes him as extra peculiar. The herald

takes his position upon a housetop and shouts as loudly as he can the announcement he is required to make.

On the same morning, exactly at sunrise, the priest places a line of sacred meal on a certain portion of the trail between the two villages at the end of the first mesa, and on this line of meal rests a *na-kwa-kwo-chi,* or several stranded cotton strings to which feathers are attached.

We do not know, as yet, by what signs the priests determine the date of the beginning of the ceremonies, but before the public announcement is made a ceremonial smoke is held by the more important priests and they determine the time.

In the underground chamber the secret ceremonies comprise the singing of certain dramatic songs, which give the history of their mythical hero, Tiyo, who brought the ritual of the Antelope and Snake clans from the underworld. On four separate days the snake priests visit north, west, south, and east, respectively, and hunt for snakes to be used in the open-air final dance. Other priests make the altar, which is composed of different colored sands sprinkled in most artistic fashion, upon the ground.

The first eight days pass in ceremonies conducted in secrecy in the underground *kiva,* but, on the morning of the *great* day, the ninth, the Snake Race takes place. I have witnessed this several times, hence I will here quote what I wrote on one of the occasions, but have never before published.

One of the priests went out to the starting point and sent the racers flying over the sand. In the meantime another one prepared the terminal goal for their arrival. Cloud symbols, falling rain, and *pahos* were arranged across

the path, and other *pahos* were deposited in nearby shrines. Then, with a crook in one hand and a tray of sacred meal in the other, the chief priest stood awaiting the racers. At length one of the most keen-eyed of the spectators declared he could see a racer, two, three, in the far-away distant valley. Soon the figures grew more distinct, and then began quiet cries of recognition, and one could feel the suppressed excitement of the spectators. Yet there was no outward show, no shouting, no urging of the runners to greater endeavor. Rather one felt that here was some struggle going on which the onlookers regarded as sacred, and that quiet prayers were being uttered that loved ones might win.

Nearer and nearer they came. The excitement visibly increased. Bodies were leaned far out in the intensity of the watching. Children spoke out to each other, and now and again turned to their parents in questioning, or to tell what they saw. Now the racers were close enough to be seen with distinctness, an irregular, wavy line of bronze beings in swift motion. Naked save for the breech-clout and moccasins, long black hair whipping behind in the morning breeze and the swiftness of motion, bodies glistening with sweat, it was a stirring sight. Here, indeed, was living poetry, Greece, Rome of ancient days actually set down before us. What graceful runners they were. How beautiful their nude bodies appeared. How wonderful in the manifest endeavors they were making to win! The trail was sandy and heavy. One wondered how they could possibly run at all for any length of time over so soft a footpath, and yet they were coming towards us at a terrific gait, and there was little sign of lagging or of giving up.

They had come at that wind-breaking pace several miles,

and yet seemed to be as agile, as fresh, as resilient in body as if they had but started. That was the growing wonder. They were not fagged out. They were still actually *racing*. See! one little fellow, sixth in line, suddenly makes a splendid spurt of speed. Slipping to the right, out into the soft sand, he leaps past the man ahead of him, aye, of two, and becomes fourth instead of sixth. The ones ahead must feel the new pressure intuitively, for they press forward with extra speed. One of them makes a similar attempt, but cannot make it, and falls back to his old place, only to be outdistanced, the next moment, by the one behind him, who dashes ahead.

Now they reach the foot of the trail, and just before they do so the third youth leaps forth as if shot by a catapult. The burst of speed was terrific, splendid, wonderful, a most marvelous exhibition of reserve power. You felt that he had been purposely waiting for this special moment, had trained himself for it in the days, weeks, months, that had preceded the race, so that now, with absolute confidence, at the critical moment he took the first place from which it seemed impossible anyone could dislodge him. With an upward spring, his foot was the first to feel the rock of the ladder-like ascent, the final lap of the race, the climb that makes a white man gasp and pause a dozen times as he comes up leisurely.

But here were these youths bounding up like young deer, or chamois, actually bounding up, two steps at a time, after running ten miles or more over the sand. Wonderful! Marvelous! Unbelievable! For a time we lost sight of first one, then another, in the windings of the trail. Expectancy grows. Can they keep it up?

Photo by author

ANTELOPE PRIESTS AT WALPI, HOPI SNAKE DANCE

Photo by author

THE TRAIL TO WALPI UP WHICH THE RACERS ASCEND

Then, to our infinite amazement, the impossible takes place. The youth who lost first place at the foot of the trail, at a favorable moment and spot, does the incredible thing of out-and-up leaping, passing his competitor, on that steep flight of steps. With an expenditure of will power and dynamic force that reveals the power of the mind over a perfectly disciplined body he shoots upwards, and everyone knows he is the victor. The chief priest steps forward with dignity and calmness to meet him. Another priest salutes him with the throwing toward him of a mechanical contrivance that makes the diamonds and zigzags of the lightning. He is sprinkled with sacred meal, receives a *paho,* and passes on. Then, one by one, and still exuberant instead of exhausted, the other racers come up the trail.

The winner has gone ahead to the *kiva,* donning a calico shirt some one belonging to him hands him on the way, and there, with due solemnity, one of the priests gives him some other token of his supremacy in this race. And the race has been so well timed that the racers reach the *kiva* just at sunrise, when the ceremony, down below, of the Dramatization of the Sixteen Songs is nearing its close.

This, indeed, is the great day. The Snake Priests wear their snake kilts all day and are characteristically decorated. Several of them went out and hunted in the fields for more snakes, bringing in anything they happened to find.

Washing of the Snakes. At noon the most thrilling part of the whole ceremonies takes place, not even excepting the open-air dance later in the day. This transpires in the secrecy of the *kiva,* and elsewhere * I have recounted how

* *The Indians of the Painted Desert Region,* by George Wharton James. Little, Brown & Co., Boston.

hard I found it to be allowed to remain. But I did so, and in due time took my place on the ground among the priests, as if I were one of them.

Soon after the noon hour the father of the chief priest brought down the ladder a large bowl, which, with elaborate ceremony, he placed in its designated place. None of the priests spoke above a whisper, and everything indicated the awful solemnity they all felt, and that the most important rite of all was about to begin. Try to imagine the scene when all was ready. The underground chamber had been hewn largely out of the solid rock, some twelve or fourteen feet square. The only light there was came down the hatchway, out of which protruded the long poles of the ladder. At its foot to the right the bowl, in which the snakes were to be washed, was placed, and around it sat six of the most important of the priests, headed by the chief priest. Behind the ladder, on the raised stone bench of the *kiva,* were the several pottery jars, or *ollas,* in which the snakes had been placed preparatory to this hour, and two priests had charge of these. The snakes had been gathered, with great ceremony, on separate days, from one of the cardinal points, until North, South, East, West, and "here" had been covered. At the other end of the room was the snake altar, with two attendants, and the rest of the space was occupied by the priests, squatted cross-legged upon the floor, each with a rattle in his left hand, amongst whom I had taken my place.

After the ceremonial pipe had been lit by the pipe-lighter, it was handed to the Snake Chief, who puffed smoke several times into the liquid, and then passed the pipe along. Then, swiftly, began and transpired the actual snake-washing, which I will let Dr. Fewkes describe, though four times I

have been privileged to witness it, and actually take part in it:

Just then the Snake priests, who stood by the snake jars, began to take out the reptiles, and stood holding several of them in their hands behind Sú-pe-la, so that my attention was distracted by them. Sú-pe-la then prayed, and after a short interval two rattlesnakes were handed him, after which other venomous snakes were passed to the others, and each of the six priests who sat around the bowl held two rattlesnakes by the necks, with their heads elevated above the bowl.

A low noise from the rattles of the priests, which shortly after was accompanied by a melodious hum by all present, then began. The priests who held the snakes beat time up and down above the liquid with the reptiles, which, although not vicious, wound their bodies around the arms of the holders. The song went on and frequently changed, growing louder and wilder, until it burst forth into a fierce, blood-curdling yell, or war-cry. At this moment the heads of the snakes were thrust several times into the liquid, so that even parts of their bodies were submerged, and were then drawn out, not having left the hands of the priests, and forcibly thrown across the room upon the sand-mosaic (the altar), knocking down the crooks and other objects placed about it.

As they fell on the sand-picture three snake priests stood in readiness, and while the reptiles squirmed about or coiled for defense, these men with their snake-whips brushed them back and forth in the sand of the altar. The excitement which attended this ceremony cannot be adequately described. The low song, breaking into piercing shrieks, the red-stained singers, the snakes thrown by the chiefs, and the fierce attitudes of the reptiles as they landed on the sand-mosaic, made it next to impossible to sit calmly down and quietly note the events which followed one after another in quick succession. The sight haunted me for weeks afterwards, and I can never forget this wildest of all the aboriginal rites of this strange people, which showed no element of our present civilization. It was a performance which might have been expected in the heart of Africa rather than in the American Union, and cer-

tainly one could not realize that he was in the United States at the end of the nineteenth century. The low, weird song continued while other rattlesnakes were taken in the hands of the priests, and as the song rose again to the wild war-cry, these snakes were also plunged into the liquid and thrown upon the writhing mass which now occupied the place of the altar. Again and again this was repeated until all the snakes had been treated in the same way, and reptiles, fetishes, crooks, and sand were mixed together in one confused mass. As the excitement subsided and the snakes crawled to the corners of the *kiva,* seeking vainly for protection, they were again pushed back into the mass, and brushed together in the sand in order that their bodies might be thoroughly dried. Every snake in the collection was thus washed, the harmless varieties being bathed after the venomous. In the destruction of the altar by the reptiles the snake *tiponi* stood upright until all had been washed, and then one of the priests turned it on its side, as a sign that the observance had ended. The low, weird song of the snake men continued, and gradually died away until there was no sound but the warning rattle of the snakes mingled with that of the rattles in the hands of the chiefs, and finally the motion of the snake-whips ceased, and all was silent.

But the ceremony was not wholly finished, although the snakes had been thrown into "their home," the sand picture, and thoroughly dried by the sand. Sú-pe-la sprinkled sacred meal in the liquid in which the snakes had been bathed, and threw a pinch of the same to each of the six cardinal points. He then prayed, and as he did so, all the assembled priests responded, while those who had handled the snakes washed their hands in the liquid, and rubbed it on their breasts and other parts of their bodies. Kó-pe-li (the chief priest) also prayed fervently, and sprinkled meal in the liquid, followed by some of the remaining snake priests.*

I have thus quoted from Dr. Fewkes that my readers might know in the language of a cool, deliberate man of science, what definitely transpired. He stood as an onlooker.

* "The Snake Ceremonials at Walpi," *Journal of American Ethnology,* vol. iv. pp. 84-85. Houghton Mifflin Co., Boston, Mass.

On the other hand I was an actual participant. I was seated in the midst of the priests on the floor. I joined in the song, and learned exactly when to burst forth into the ear-splitting and hair-raising war-cry. And in one of the ceremonies I had a personal experience with a rattlesnake which it may be interesting to recount. In this instance all the snakes were not kept on the altar during the progress of the ceremony, for, leaning up to look, I was surprised to find it almost bare of snakes. I then found they were given the freedom of the room and were all about us.

Suddenly I felt a peculiar sensation on my right knee. Looking down, there was a good-sized rattler, fully five feet long, his head upreared and resting on my right knee, while he swayed his head, first to one side and then to the other, as if he were studiously examining me with one eye and then the other, as much as to say, "What are you doing here. You're no Hopi?" I did not feel altogether comfortable under this intense personal scrutiny, nor was my embarrassment relieved when I observed that the two priests, one on each side of me, had caught sight of the snake and were keenly alive to what was taking place. I *felt* they were watching me, and more eager to see what I would do, rather than what the snake would do.

It is impossible fully to explain the sudden impulses that seize one and that demand that one do what the moment before he would have deemed an impossibility. This was such a moment. My subconscious self seemed to say: "These men are watching you. Now's your time, Seize the snake and the opportunity to make them your friends for life!" Acting on the impulse, I grasped the snake around the neck, very gently, but very firmly, and raised

him up, holding the flat of my left hand to receive him. He quietly rested and then coiled on it, while I put my hand over him and stroked him as I had seen the priests do. As quietly as if he were a pet kitten he remained under my warm hand, while the priest on my right, delighted with my friendly action to the "Elder Brother," patted me gently on the knee, the while exclaiming in his soft, sweet voice, *Lolomai! Lolomai!*—Good! Good! The priest on my left gave me an extra pat, an emphatic *Lololami! Lololami!*—Very good! Very good!

Seeing that he was so pleased, I silently handed him the snake, which he placed on the ground, and we joined again in the song.

When all the snakes were washed the chief priests took away the charm liquid in its bowl, and also the jars in which the snakes had been kept. Other priests herded the snakes to one side of the *kiva,* and then all retired save one, who was left to guard the snakes. When I went in for the ceremony I had braved all risks, and unheeded all remonstrances, pretending not to understand them, and had taken my large tripod camera down into the *kiva.* I knew where the snakes would be "herded," and that I might have an opportunity to make a photograph. I had measured the distance, arranged the focus, put in the plate-holder and removed the slide, setting the shutter and putting on the cap for a cap exposure. Now was my chance. Keeping the priest out of the way, I secretly slipped off the cap, and allowed the plate to remain exposed for fully five minutes, and the accompanying picture is the result. This, I believe, was the first time any photograph was ever made of the snakes in the *kiva,* as mine was the first time, so my Hopi

friends assure me, that a white man had ever actually participated in the ceremony.

The Snake Dance. During the afternoon the priests prepare for the public ceremony, in the dance-plaza, of the Snake Dance. The general writer describes it as a wild, frenzied, fanatical ceremony, hideous, repulsive, and disgusting; and he gives vivid word pictures of crazily-excited savages, in a half-nude condition, shrieking, yelling, and gesticulating in a manner suggestive of an asylum of the violently insane, while they toss around and handle venomous snakes with an utter disregard of dangerous consequences. Such descriptions are utterly false and misleading. There is nothing that justifies these wild stories. A far more accurate and reliable story is that written by Hamlin Garland:

At five o'clock the plaza surrounding the sacred rock was heaped and piled with people. There were representatives from the other six villages; there were cowboys from southern Colorado and from Holbrook; there were Navahos from the great reservation to the east; there were reporters for eastern papers; there were scientists from Boston, New York, and Chicago; there were teachers from the Hopi school at Keams Canyon.

Upon every cornice, every roof, every adobe balcony, the Hopis themselves were gathered, attired in the most brilliant and the quaintest costumes. The buildings rising against the deep blue cloudless sky, covered with these barbaric colors, made a picture worthy the brush of the finest artist. As a painter said, "It was a salon picture." Nothing can be compared with it except possibly the final feast of Holy Week in some interior Mexican town. The white people laughed, the dogs and children made tumult, while the crowd waited patiently the incoming of the Snake men. Below, on the valley floor the cloud shadows floated like boats on a yellow sea.

As I stood near the *kisi* of cottonwood boughs a man passed

me with a bag containing something heavy; for an instant I could not realize that the bag contained snakes; he handled it as if it contained sand, and the reptiles made no noise. So matter of fact were his actions, few observed his entrance. I returned to the *kiva* and waited the coming of the priests. Two children emerged first from the Antelope *kiva,* little tots hardly more than five or six years of age, striped like their elders with kaolin, with little chins whitened and foreheads blackened, with strings of beads looped about their necks and rattles in their hands. The little fellows ranged themselves up near the corner of the nearest house and waited the coming of their elders. It was wonderful to see with what dignity these chubby little babes bore themselves. They did not allow themselves to smile nor to notice the other youngsters about them.

The asperger came next, an old man carrying a bowl of charm liquid. While the rest climbed out behind him, he busied himself in sprinkling the way to the Snake *kiva;* the other Antelopes following scattered from their right hand a pinch of meal into the open door of the Snake *kiva.* The rear was brought up by the whizzer, an old man dressed in completely archaic costume, carrying two small pieces of board attached to strings. These he whirled sharply, making a sound resembling thunder and hail.

After they had all passed through the narrow street and upon the plaza, the Snake priests came up from below. They took down the sign which hung upon the ladder, and which was always present during the last four days of their occupancy of the *kiva,* and slowly formed into line. Each man had the upper part of his face blackened, and the lower part of the face whitened. Each carried a bunch of eagle feathers in his hair, and from his belt behind streamed the complete skin of a fox. Each wore a short cotton kilt, ornamented with a figure of the Great Plumed Serpent. Many of them, if not all of them, wore upon the right leg a small turtle-shell rattle. Their whole dress was splendidly barbaric, and their faces were very intent, almost solemn. There was, however, no sign of abnormal excitement. They talked among themselves in low tones, and ranged themselves in line. There were no

signs of hypnotizing and no sign of the strain under which they had been laboring for nine successive days.

At a signal from the leader, Kopeli, they entered the plaza in single file, on a rapid walk, and after circling the plaza, ranged themselves in a slightly curved line before the tent of cottonwood boughs in which the snakes were placed, and on each side of which the fifteen Antelope priests stood in line singing a wild and guttural chant. It was almost a repetition of the corn dance of the day before.

Standing thus, the Snake chiefs shook their snake whips with a peculiarly quickening action, in time to the rattles and the chanting of the Antelopes, stamping also with the right foot. The whole line swayed rhythmically as they rose and fell in this measured step from the right foot to the left. The song changed to a deep, musical, humming sound; the asperger stood before the *kisi* asperging to the cardinal points. The Snake men did not sing at any time.

A wilder hum arose, a portentous, guttural, snarling sound, which passed soon to a strong, manly, marching chant, full of sudden, deep-falling, stern cadences. Then Kopeli, the Snake chief, and the one second to him joined arms and danced slowly down before the *kisi*. They stopped, and when they rose Kopeli held in his mouth a snake. His companion placed his left arm over the Snake chief's shoulders, and together they turned, circling to the left. The snake hung quietly from the Snake priest's mouth. It was held at about nine inches from the head. Behind him walked the third man, the snake gatherer. They passed with a quick, strong step, one might almost say with a lope, in time to the singing.

Immediately behind came another group, the snake carrier holding an entire snake in his mouth, the head protruding about an inch. These two were followed by a third man, the snake gatherer; and soon the entire line of thirty-three Snake priests had broken into eleven groups and were circling the plaza, one man in each group carrying from one to three snakes in his mouth. The singing continued, stern and swift like a strong stream, and although at times the dancers lost step to the music, in general they may be said to have retained throughout all the rush of movement a tolerable accuracy of

rhythm. A group of women stood near and threw sacred meal upon the men as they passed. They kept far from contact, I observed. The excitement of the spectators increased. I pushed close to the circle of dancing priests to study their faces.

One man passed with an enormous bull snake in his mouth. Its tail hung down to his knee. Each snake carrier danced with his eyes closed and his chin thrust forward. The reasons for this were obvious. The little snakes were the most vicious, and struck repeatedly at the eyes and cheeks of the priests. Several of them seized upon the skin, and held on until brushed away by the whip of the "hugger." In every case which I observed the rattlesnakes hung peaceful, and without any action whatever, from the mouths of the dancers, and only struck or coiled to strike after falling upon the bare rock. Their coats seemed dry or dusty.

One man went by with two large rattlesnakes in his mouth. Another held a rattlesnake and two larger bull snakes between his lips; and a third priest, to silence all question of his superiority, crowded into his mouth four snakes! The gatherer who followed him held in the fingers of his left hand six or eight snakes, strung like pieces of rope. In fact, they all handled the snakes precisely as if they were skeins of yarn, with the single exception of the moment when they snatched them from the ground.

Once or twice there was a brief struggle between the snake gatherer and the fallen snake. In every case which I observed the snake gatherer brushed the snake with the feathers of his snake whip until he uncoiled and straightened out to run. After the gatherer picked him up he was as helpless as if dead.

As the dance went on the excitement grew. The clink of metal fringes and the patter of rattles filled the ear. The snakes dashed into the crowd, shouts and screams and laughter arose, but the wary snake gatherer in every case caught the snake before it passed out of reach. In one or two instances when a rattlesnake ran toward the women with their basket plaques of meal, they broke into wild screams and ran. Evidently they feared the rattlesnakes quite as much as any of the white women. At least, so deep was my interest to see, that I lost all sense of hearing. They all moved like figures in a dream.

During all this time, whatever the outcries among the spectators, whatever the screams or laughter among the women with the meal, the Snake priests, intent and grave, showed no trace whatever of excitement. It is absurd to speak of hypnotism or frenzy of any kind. They were not in the slightest degree moved either to fear or laughter, or even to the point of being hastened or retarded by the presence of the white man. They had a religious duty to perform, and they were carrying it forward, intent, masterful, solemn, and perfectly silent. Incredible, thrilling, savage, and dangerous as it appeared to us, to them it was a world-old religious ceremonial.

At last, when all the snakes had been carried, and when each snake gatherer held in his hand huge bundles of the apparently inert serpents, the Antelopes and the snake gatherers formed a swift circle. As they waited, Kopeli drew a circle of meal upon the ground, and all the snakes were thrown in a tangled, writhing heap within this circle. Then the women rushed timorously forward and sprinkled meal over the writhing mass. Then, most wonderful of all, before the swiftest serpent could escape, the priests snatched them up in handfuls, and started with them down the sides of the mesa. In an incredibly short time every snake had been whipped from the ground and was in the hands of these runners. Each man carried from eight to twelve, indiscriminately snatched up. This whole action of heaping the snakes within the circle, covering them with the meal, and snatching them up again was all done in the space of a few seconds.

The snakes, "the Elder Brothers," had taken part in the dance, their heads had been sprinkled with meal, the prayers to the gods had been whispered to them; they were now to return to the fields to carry the messages of the Snake priests to the gods of rain and plenty.

On the southern side of the mesa I stood to watch two of these marvellous runners. They ran with the speed of goats down the precipitous slopes and out over the sandy foothills. At a distance possibly of half a mile from the foot of the mesa, under a huge rock, they knelt down, uttered a little prayer, and released the snakes. In returning they mounted the steep paths with almost undiminished speed. Other run-

ners went to the east, to the south, to the west. In twenty minutes from the time the Snake priests had ranged themselves before the *kisi,* a hundred snakes, half of them rattlesnakes, had been carried around the plaza in the mouths of eleven men, had been dropped upon the floor of the plaza, recovered by the snake gatherers, thrown into a heap, sprinkled with meal, snatched up by eight men, and carried back into the open country. During this time no one had been bitten, no smallest snake had escaped in the crowd which closely pressed upon the Snake priests, and, so far as could be told, no ill thing had occurred. This was the climax of the incredible, and I could not believe it had I not witnessed it. As I look back upon it, it is akin to the sense-defying action of dreams.

Meanwhile the Antelopes had calmly finished their singing and had marched back to the Antelope *kiva.* The remaining Snake priests had also retired to their *kiva,* and were divesting themselves of their snake whips and rattles, and other removable parts of their regalia.

There now occurred a singular scene on the north side of the village, on the edge of the cliff. This was the vomiting of the priests. It has been called a ludicrous sight; certainly it is an unusual thing to see thirty men drinking an emetic at the same moment. But I felt little inclination to laugh, for it showed how severe had been the strain upon the devotees. It was no joke. They had been fasting for thirty-six hours. They had been forced to live for five or six days with a hundred snakes in a close underground chamber. They had held the writhing bodies of from five to twelve snakes in their mouths. They may have been bitten by the snakes. Whatever the purpose of this retching, certainly it was a grim and heroic treatment. They passed through it with so much of dignity as any man may. They made no talk among themselves or to those standing about. As in all the other ceremonies, they were composed, serious, and intent.

This, however, was the final and severest part of the ceremony. They were now permitted to drink copiously of clean water. They also immediately unbent. They smiled and greeted their acquaintances standing about. And now a pretty custom intervened. There came into their group five or six

young girls, daughters and sweethearts, we may suppose, to help the priests wash the paint from their bodies. It added a fine touch of clean, sane domesticity to the scene. The girls had no sense of false shame. They laughed and chatted as they splashed the water over the glistening, brown bodies of the men. It would be impossible to see elsewhere in America another such scene. It humanized these people. It took away all feeling of savagery from these men. They were priests. They were performing in a traditional ceremony. The ceremony itself had in it something of the barbarity of the olden time, but their pleasant and smiling faces as they received water from the hands of their women had no trace of ferocity left.

The fitting close to this remarkable, and in many respects beautiful, drama and religious ceremony was the procession of women bearing gifts of bread and meats to the *kiva*. They came with seriousness and reverence, carrying in their uplifted hands steaming stews, piles of blue piki bread, and golden mush. This disappeared down the *kiva* mouth, enough provision to last a hundred men a week.*

Naturally the inquiring mind of the thoughtful white man asks what it is all about, what is its real significance. All study and investigation points but to one answer. The Snake Dance and all its attendant ceremonies is an elaborate prayer for rain, in which the Elder Brothers of the Snake and Antelope *gentes* must take part. They are, therefore, gathered from the fields for that purpose, and specifically intrusted with the prayers of the human participants, and then given their liberty to bear these petitions to their Snake Mother and other divinities who have the power to send the blessing of copious rains upon the otherwise arid and parched farms of the Hopi. And, singular — or is it singular — to relate, in the thirteen times I have witnessed the ceremonies I have never once known the rain to fail — though, sometimes, it has come a few days before the public dance instead of after it.

* *Harper's Weekly*, August 15, 1896, pp. 806-7.

CHAPTER XII

OVER THE LAVA FIELDS TO THE "SEVEN CITIES OF CIBOLA"

WHEN the old Spanish conquistadores crossed what is now Arizona and New Mexico they sought as easy a road as was possible under the conditions. So does the ordinary modern tourist and traveler. On the other hand, there are a few who are willing to travel the rockiest road, and endure hardships, if thereby they may see and learn something of the great land they are proud to call their own. Only travelers of the latter type should try to go to the "Seven Cities of Cibola"—Zuni—by way of the lava fields. The others should go to Gallup, obtain an automobile and ride there over fairly good roads. But we are on a sight-seeing expedition—a geological banquet.

All the way along from Albuquerque, New Mexico, on the main line of the Santa Fe, the observant traveler has observed evidences of volcanic activity. Near the Indian village of Laguna, on the left-hand side, the lava is a very prominent feature, and remains in sight for miles, close to the course of the San José Creek (sometimes a turbulent river), which has cut its way down and formed the valley through which the railway runs. Mile after mile it is passed, a long grayish-black streak on the landscape, clearly revealing a great outflow from one or more vents, for no volcanic cone is to be seen until much farther west. This is Mount

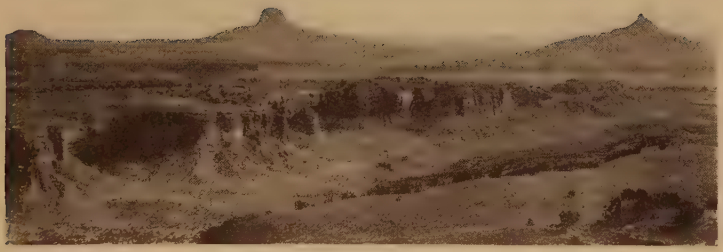
San Mateo, one of the sacred mountains of the Navahos, and called by them *Tsótsil*. It was named Mount Taylor, in 1849, by Lieut. Simpson, of the United States Army, in honor of the then president. To us it is particularly interesting, for from it has flowed a vast amount of the lava of this region. Rising up out of the valleys east and north of San Mateo are several other prominent volcanic peaks. The chief of these is called by the Mexicans *El Cabezon*, or "The Great Head." The Navahos tell an interesting legend about this and the surrounding lava flows. It is to the effect that one of the gods, whom they were terribly afraid of, was a cannibalistic monster, named Yeitso, who used to feed upon the bodies of men, women, and children. For years they submitted to the devastations of this fierce giant, until there arose a hero who, with the aid of the gods and his brother, slew the monster, and cut off his head. According to the Navaho legend, as recorded by Dr. Washington Matthews:

They cut off his head and threw it away to the other side of Tsótsil, where it may be seen today on the eastern side of the mountain. The blood from the body now flowed in a great stream down the valley, so great that it broke down the rock wall that bounded the old lake and flowed on. Niltsi whispered to the brothers: "The blood flows toward the dwelling of the Binaye Ahani (others of the magic-working gods who were enemies of the Navaho); if it reaches them, Yeitso will come to life again." Then Nayenezgani took his knife club, and drew with it across the valley a line. Here the blood stopped flowing and piled itself up in a high wall. But when it had piled up here very high it began to flow again off in another direction, and Niltsi again whispered: "It now flows toward the dwelling of the Bear that pursues; if it reaches him, Yeitso will come to life again." Hearing this, Nayenezgani again drew a line with his knife on the ground, and

again the blood piled up and stopped flowing. The blood of Yeitso fills all the valley today, and the high cliffs in the black rock that we see there now are the places where Nayenezgani stopped the flow with his knife.*

The whole country as far west as the San Francisco Mountains in Arizona bears evidence of great volcanic activity at, at least, three separate periods. South of the railway at McCarty's and Grant's Stations are vast lava areas, and one can trace a great flow from the Agua Fria crater. This crater is almost completely surrounded by trees, and they have clambered up its sides almost to the summit. One side of it is so steep and covered with disintegrated pieces of lava that it is almost impossible to climb it, while the other side has a comparatively easy slope. Standing on the rim of the gigantic bowl, it takes a little time to grasp the majestic proportions. The solid rock makes sheer drop into the dizzying abyss, and on the bottom, which is dimly to be discerned, an immense tree is growing up. Nearly opposite to where we stand the whole side of the crater is broken down for about three-fourths the general height, and the appearance suggested that out of this vast break the molten flood must have poured. The crater looks as if it must be from 1,500 to 2,000 feet across, and from 700 to 800 feet deep. Now imagine the scene before and after this break occurred. The great crater was then a bubbling, seething mass of incandescent molten rock. Watch it boiling and lifting up bubbles which burst and let out the poisonous gases like a magic cauldron of devil's mush almost ready to be served. Every once in a while a mass of the

**Navaho Legends,* by Washington Matthews. Published for the American Folk Lore Society by Houghton Mifflin Co., Boston, Mass.



Courtesy of U. S. Geological Survey

LAVA "NECKS," OR "HEADS"

OVERLOOKING THE GREAT LAVA FIELD OF NEW MEXICO

Courtesy of U. S. Geological Survey

LAVA "NECK"

Photo by F. H. Maude

PLAZA IN THE PUEBLO OF ZUNI, NEW MEXICO

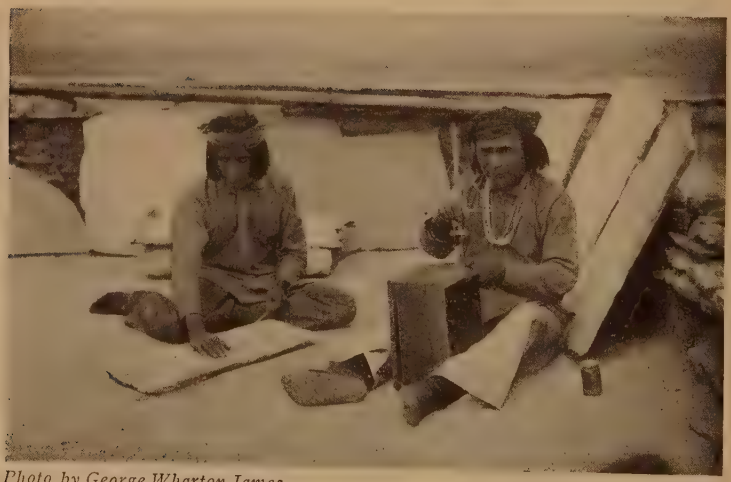


Photo by George Wharton James

ZUNI INDIANS MAKING BEAD NECKLACES

surrounding bowl crumbles and falls into the "mush pot," and, suddenly, with a great crash and a muffled roar the wall on the north breaks, and gives way to the pressure of the mass of liquid within. Down it falls with a noise that can be heard for miles and out pours the wild, raging flood with its fierce heat, to spread over the valley.

For days and days it spread in every direction, flowing down canyons, filling up depressions, and penetrating everywhere. At the first great outburst the wall of flaming and roaring fire-liquid must have been fully five hundred feet high. What could withstand its fierce oncoming!

The further away it got from the crater the more it cooled. Then began to occur miniature explosions which we can even today clearly trace and understand. As the molten rock flows, the exterior mass rapidly cools and solidifies, while the interior of the mass remains liquid and flows on. Thus we have the peculiar spectacle of a flowing body that emerges from a tunnel of its own making, almost as if one had hold of the end of a gigantic sausage, which, as he pulled upon it, magically extended its length while still remaining at about the same size. The tunnels thus formed of the cooled shell of the lava were held in place by the pressure of the gases developed by the intense heat. Occasionally a great gas bubble would burst, fill the tunnel so far with its volume, the pressure of which the slight shell could not resist, and there would be an explosion. In such a case the rock would turn up on end, be shattered, fall into the hole caused by the explosion, and nothing but a wild, jagged mass of rocks with sharpened edges be exposed. In other cases the tunnels would remain in the form of caves, and some of these I have followed for quite a dis-

tance, high enough, in places, to allow a man on horseback to ride comfortably.

In some cases the half molten rock was turned over by the expanding gases until it seems as if a gigantic plowshare, able to turn a furrow forty or fifty feet high, had come along and plowed it up in this stupendous fashion. In many places the lava has the appearance of miles and miles of gigantic black cauliflowers, into which garden some fierce demon, possessed with the spirit of destructiveness, had entered with a club, with which he had struck right and left, breaking the "flowers" of the vegetables into pieces of every size and shape and scattering them in every direction.

Several days may be spent in following these lava flows, in ascending Mt. San Mateo, and tracing the remnants of the earlier flows. One must be prepared for such exploration, however, as the rocks are so sharp and cutting that a pair of ordinary shoes are cut into strips in the course of a few hours.

Leaving the lava fields one now turns his attention to Zuni, for so do the Indians call the mythical "Seven Cities of Cibola" of the early Spanish explorers. On the way we pass, not far from the home of Don Leopoldo Mazon, at Tinajas, the interesting Inscription Rock, where the explorers of two and three hundred, and more, years ago left their autographs upon the faces of the cliff. This is one of the most fascinating historic records of the world. Many of the inscriptions are as clear, almost, as the day they were written, and are the unquestioned work of the men (or their followers) whose names they bear and whose journeyings they briefly record.

Juan de Oñate (1605), De Vargas (1692), Silva Nieto

(1629), Juan Paez Hurtado (1736), Basconzelos (1726), and Archuleta (1636), are amongst the number, and the dates are those of the time when they camped under the shadow of this imposing cliff. One of the inscriptions is of particular interest to us, on account of its reference to the Zuni we are going to visit. It is in the abbreviated Spanish of the times and, translated, reads: "They passed on the 23rd of March, of the year 1632, to the avenging of the death of the Father Letrado. (Signed) Lujan." Father Letrado was a Franciscan missionary who sought to introduce civilization and Christianity to the Zunis. In February, 1630, they murdered him. The Governor of New Mexico, Francisco de la Mora Ceballos, sent a handful of soldiers from Santa Fe under the command of Colonel Tomas de Albizu to avenge his death, and it is possible that the Lujan of the inscription was a soldier of this expedition. When the soldiers arrived at Zuni, they found the pueblo was deserted and the people had established themselves in new homes on the summit of Thunder Mountain, a massive island of rock a few miles away, reminding one somewhat of the rock of Acoma, described in Chapter x. With great tact and diplomacy Albizu persuaded them to return to their homes, and on promises of amendment and future good conduct, their murder of Father Letrado was forgiven.

Of Zuni itself much might be written, but space demands that I be brief. A most fascinating story of the Zunis is to be found in three back numbers of the *Century Magazine*, dated December, 1882, and February and May, 1883, in which Lieutenant Frank H. Cushing tells "My Adventures in Zuni," and a most exhaustive but absorbingly interesting

account of these people is presented in the *Twenty-third Report of the Bureau of American Ethnology,* written by my learned friend, Mrs. Matilda Coxe Stevenson, as the result of many years of life among them.

Zuni is now known to have been the Cibola of the search of Coronado and the early Spanish conquistadores. It was in 1540 that the swashbuckling Spaniards crossed the mountains, the deserts, the sandy wastes, and the Indian-infested regions of Northern Sonora and New Mexico, but they were sadly disappointed in that they did not find the same fabulous wealth that Cortés and Pizarro had found in Mexico and Peru.

The Zuni of today is an ordinary pueblo, with a great seven-storied community house, after the general style of Taos. There are many interesting things about the people, and a score of fascinating places to visit, but I have space left in this chapter only to record an attempt made to kill a witch, which I had the pleasure of helping frustrate. All the Pueblo Indians are believers in witchcraft, and many an unhappy victim has lost his or her life because someone made an accusation of witchcraft which it was impossible to refute. Many times I have been present at trials of witches, and no outsider can possibly conceive the intense earnestness and the deadly fervor of the native medicine-men in their desire to rid their people of this awful, secret, and therefore terrible influence. The Zunis are in constant fear of being bewitched. Young mothers must protect their infants, the owners of fine beads and other adornments are constantly in fear lest some witch or wizard, influenced by jealousy, should strike them with disease. Suspicion is seldom absent, and even the lower animals are not always

safe, for it is confidently believed that witches are able to assume their shape at will.

One of the most noted personages of Zuni was Wewha. I knew her well. She was a person of great mental ability and was once taken across the continent and became for a while the guest of President Cleveland, in the White House.

She was a *man,* who, for religious reasons connected with the peculiar beliefs of the Zunis, foreswore his manhood, dressed as a woman, lived as a woman, did all the household work of a woman, and in every way appeared to be one of the gentler sex.

Wewha was the strongest character and the most intelligent Zuni I have ever had the pleasure of knowing, and it was a great grief to me when I learned of her death. Not only did I feel this, but the chief medicine-men of the Zunis felt it was a great blow to the tribe, and at once sought to accuse someone of bewitching her and thus causing her death. A poor old woman named Melita was accused of the crime. Blindfolded, handcuffed, and gagged, she was taken to one of the underground kivas and there bade confess. She refused. She was then stripped naked and so severely beaten that her back was completely raw when I found her a few days later. The priests found her guilty and condemned her to death. The general method of killing a witch is to tie the hands together behind the body and then hang the poor creature up by the thumbs. Melita was thus strung up until the blood oozed from eyes, ears, nose, and mouth, and the blood vessels of her cheeks burst with the fearful pressure.

Just as she was in the final stages of her hanging, between

life and death, my wagon was seen approaching the pueblo, and a messenger came rushing in to apprise Naiuchi — the chief priest — of that fact. He ordered the execution suspended until I was out of the way. But I had not been long in the village before one of the weeping friends of Melita succeeded in secretly reaching me with the news. For hours I sought the victim of the superstitious people's wrath, and when finally she was found it was with back, wrists, and cheeks fearfully wounded.

Medical attention was secured for the poor old woman and she recovered, and the priests who assaulted her were arrested and kept in prison for several months.

While one is at Zuni he should not fail to visit Thunder Mountain, see the figures that are said to be the sacrificial victims offered to appease the anger of the gods who had caused their valley to be flooded, and also the shrines on the summit of the mountain to certain of the Zuni gods. It was also on the cliff-faced precipice of this mountain, in a hidden shelter, that one might search for a lifetime in vain, that I found the shrine of Unaïkah, their warrior god, a shrine that no white man had ever gazed upon before my fortunate discovery. These and other interesting experiences, especially if one strikes the Zunis at the time of their ceremonial dances, or races, will make a trip to this historic spot one long to be remembered.

CHAPTER XIII

METEORITE MOUNTAIN AND SUNSET CRATER

CANYON of the Devil does not sound polite in English, but thousands of transcontinental tourists on the Santa Fe, who would not say it in English for worlds, mouth it quite complacently in its disguising and sonorous Spanish, *Canyon Diablo*. And a perfect devil of a canyon it is to those who have tried to cross it in a wagon, or even on horseback, or afoot — as I have many a time — before there were any roads in the country to speak of. Now, of course, bridges make it easy. It is a faint suggestion of the wonders of the greater gorge of the Grand Canyon, sixty-five miles to the north, and gives one a few delicious thrills as the train passes over its spider-legged, frail-looking, but scientifically constructed, steel-girdered bridge.

But to the left, going west, is a peculiar mound-like mass, only ten miles away to the southeast from the station, and two hundred feet in height. Walk up the slope to its top and you find yourself on the rim of a vast natural bowl that is a mile wide and about six hundred feet deep. Its appearance suggests that it was once much deeper than it now is, and that it has been filled up with the earth, of which its forty-acre bottom is now well covered.

At once you exclaim: An extinct volcanic crater. But if you use your eyes all around you will see that that cannot be, for there is not the slightest evidence of volcanoes.

Long before the theory now accepted was propounded, I was assured it was not a volcano.

How was it formed?

Nobody knows, though scientists and wiseacres generally have spun theories, many and varied, about it. The best of these and the one generally accepted is that a meteorite, hurling itself through the sky from some far-away planet, and startling the night gazers on the Arizona deserts in some long-forgotten age with its brilliant trail of light, suddenly struck the earth at this spot, landed and remained there, possibly exploding as it fell, and throwing off some portions of its solid substance in a shower which scattered in every direction.

At Canyon Diablo one can well see and study the various rocky layers of which this plateau is formed. On top there is a covering of red sandstone, which is much worn in places by the carving and eroding processes of nature. Below this is a layer, three hundred feet thick, of limestone, and then comes a layer of white sandstone, five hundred feet thick.

But in the "crater" of Meteorite Mountain these strata are all tipped and twisted, distorted, and smashed in every direction. As Dr. J. A. Munk carefully describes it:

> The displaced strata of rocks in the hole are tilted and stand outwards and great boulders of red sandstone and limestone lay scattered all about. If the hole had been made by an explosion from below large pieces of rock from each of the different rock strata would have been thrown out; but, while as first stated, there are plenty of huge blocks of red sandstone and limestone, there are no large pieces of white sandstone. After the superficial layers of rock had been broken up and expelled *en masse,* the deeper rock of white sandstone, being more confined, could not reach the surface in the shape of boulders, but had first to be broken up and ground to powder

Courtesy of U. S. Geological Survey

METEORITE MOUNTAIN, ARIZONA

INSIDE VIEW

Photo by author

MESA OVERLOOKING LAVA FIELDS

CEBOLLITA, ARIZONA

before it could escape. Then the white sandstone, in the form of fine sand, was blown skywards by the collision and afterwards settled down upon the mountain. It is covered with this white sand, which could have come only out of the big hole, as there is no other white sand or sandstone found anywhere else upon the entire plain.*

An Indian trader living at Canyon Diablo, working out the theory for himself, decided that the crater was formed by a meteorite and he began to look around for pieces of the heavenly visitant. In a year or two he had gathered about ten tons of meteorites, varying in size from the fraction of an ounce to one thousand pounds and more. As this was worth in the neighborhood of a dollar a pound, this field of Nature's sowing was more profitable to him than skinning Navahos, Hopis, or the chance tourists that came along. The smaller pieces were found on or near the rim, and they increased in size in proportion as they were distant from the crater, until on a circle eight miles out, the largest piece was found. The largest number were found on the east side.

Many tests have been made by scientists in their endeavors to account for the peculiar configuration of the mountain. Professor Gilbert, of the United States Geological Survey, finally decided to try the magnetic test. He assumed that if such a meteorite was embedded in the crater it would surely reveal itself by magnetic attraction. But although the finest modern appliances were used, and a variety of experiments undertaken, the results were all negative.

The trader found that the meteorites he had picked up were non-magnetic, hence he reasoned that that fact did not dispose of the idea that there might be a vast mass of the

* *Arizona Sketches*, by J. A. Munk, M. D., p. 154. The Grafton Press, New York.

meteor still in the crater which no magnetic test would reveal. In continuing his experiments this unlettered man discovered that all around the mountain small pieces of iron were scattered, looking somewhat like the scales that fall from iron while being pounded, when red hot, upon the anvil. These he called "iron shale," and contended that they were dead scales which fell from the meteor, caused by the friction of the atmosphere, ere it struck the earth. In his various tests he was greatly surprised to find that these iron scales were not only highly magnetic, but possessed polarity in a marked degree. Here was a curiosity; indeed an anomaly, to find that these scales had strong magnetic polarity, a property of electricity that is as mysterious and wonderful as electricity itself.

Now let Dr. Munk tell of further wonders:

Another peculiarity of the Canyon Diablo meteorite is that it contains diamonds. When the meteorite was first discovered by a Mexican sheep-herder he supposed he had found a large piece of silver, because of its great weight and lustre, but he was soon informed of his mistake. Not long afterward a white prospector, who heard of the discovery, undertook to use it to his own advantage, by claiming that he had found a mine of pure iron, which he offered for sale. In an attempt to dispose of the property samples of the ore were sent east for investigation. Some of the stone fell into the hands of Dr. Foote (the eminent geologist of Philadelphia), who pronounced it to be a meteorite and of celestial origin.*

Sir William Crookes, F.R.S., tells the story of Dr. Foote's discovery of the diamonds:

An ardent mineralogist, the late Dr. Foote, in cutting a section of this meteorite. found the tools were injured by some-

* *Arizona Sketches*

thing vastly harder than metallic iron, and an emery wheel used in grinding the iron had been ruined. He examined the specimen chemically, and soon after announced to the scientific world that the Canyon Diablo meteorite contained black and transparent diamonds. This startling discovery was afterward verified by Professors Friedel and Moissan, who found that the Canyon Diablo meteorite contained the three varieties of carbon — diamond (transparent and black), graphite, and amorphous carbon. Since this revelation the search for diamonds in meteorites has occupied the attention of chemists all over the world.*

Another interesting phenomenon to be seen on the main line of the Santa Fe, a few miles east of Flagstaff, is Sunset Peak. This whole region is one closely allied in its evidences of volcanic activity to the San Mateo region still further east, and which is described in Chapter XII. There are many extinct volcanoes, and miles and miles of lava. Sunset Peak is the most interesting, though not the largest of these craters.

It matters not what hour of the day you gaze upon it, or how cloudy the weather, this peak is always flooded — apparently — with sunshine. There have been many explanations given of this, but a careful study and a number of visits to Sunset Peak have satisfied me that there is but one rational explanation, and that is as follows: The rock covering the upper portion is composed largely of iron, which, decomposed and rusted, gives a peculiar glowing red, and this, seen through the clear Arizona atmosphere, even on cloudy days, suggests the appearance of sunset.

* *Arizona Sketches.*

CHAPTER XIV

OVER THE APACHE TRAIL TO THE ROOSEVELT DAM

THERE are certain first impressions that remain for a lifetime. An inlander's first glimpse of the ocean; a torrid zone native's first experience of a snowstorm; a traveler's first glimpse of Jerusalem, Constantinople, Moscow, Rome, London, or New York; a ride in a dirigible or aeroplane, these all belong to that category. In the same class, practically, I place my ride over the Arizona Mountains from Globe to Phoenix via the Roosevelt Dam. Phoenix is the capital city of Arizona, in the heart of the growingly fertile acres of the Salt River Valley; Globe is a mining and cattle-raising city high up in the widened-out canyon folds of the foothills of the Pinal Range. Midway between the two, rudely speaking, stands the Roosevelt Dam, and the vast lake it has backed up — a body of water that looks singularly at home in the bottom of what might well once have been the bed of a mountain-surrounded inland sea.

The distance is 118 miles. We made it in eight and a half hours, in February, 1915, a week after Arizona had experienced one of her ten-year-intervaled fierce rainstorms, and, therefore, the roads were not in the best of condition. Wesley A. Hill, of Phoenix, conceived the idea that many travelers, even residents of Globe and Phoenix, as well as visitors from the great outside world of travel, would enjoy

a safe and rapid automobile ride over this route, so, when the road was completed from Roosevelt to Globe, he put on a line of seven-seated cars and began to carry passengers. No indifferent or careless chauffeur can take the wheel for such a trip; nor can he be a weakling or a coward. It requires vigilance almost every minute, strength to pilot a car up and down the grades, and courage and knowledge to take the curves at a safe margin without making the trip too tedious.

Four names kept ringing the changes in my mind as we rode along — five of us besides the chauffeur, a jolly, rugged athlete, named Jimmy. These were Dante, Milton, Poe, and Doré. A Ruskin, even a Mark Twain, could not have done justice to the scenes. Only the master-intellects of the centuries in imaginative, creative power could place before the world the wonder, the wild, weird marvel of it all, the sublimity, the majesty, the vast expanse. There were practically only three great "divides" made on the trip, the first reached, after riding seventeen miles from Globe, when the sweep of the prehistoric lake site now occupied by the dammed-up waters of the Tonto and the Salt was spread out before us; the second, after ascending the Fish Creek hill, about sixty miles from Roosevelt, or the same distance east of Phoenix; and the third as we topped the crest of a ridge sweeping north from the Superstition Range towards Salt River, when the expansive view of the Salt River Valley was laid, panorama-like, before our enraptured vision.

Dante could have pictured images to make clear the inchoate and vague suggestions of the mind; images that one felt were there, that began to form, but were immediately

dispelled by others equally vague and impalpable, and that never came into actual sight. Milton, in strong, sonorous verse might, perhaps, have been able to make verbal description of the stupendous vastness of the scenes, and the sublime emotions they aroused in one's soul. Poe might have evoked weird word pictures of some of the rocks and tree forms that accompanied us on most of the trip, and Doré alone, perhaps, of all artists, could have given the finishing touch by suggesting how these wonderful scenes came into existence.

Could any of these masters in their respective spheres have seen what we saw, that any traveler now may see as easily as he may ride from one city to another, he would have added ten-fold to his potentialities as an artist, and incalculable-fold to the expansion of his capacities toward completer expression.

Hence, how absurd for me to attempt any description of this unique, this sublime, this memorable trip. I shall make no attempt. All I propose to do is to give the reader a suggestion of some of the meager and inadequate thoughts that did struggle to the surface, and that may induce him to want to take this ride for his own inspiration and delectation.

It is an inspiring sight to stand in one of the active mining camps of California. There are so many *dead* camps that where they are alive the sensation is decidedly pleasing. And Globe and Miami are both active, employing hundreds of men, turning out thousands of tons of ore, and a correspondingly large amount of bullion.

When we reach the summit of the ridge which leads us down to the Roosevelt Reservoir all mining activity is left behind. A new and strange world at once lies before us.

Photo by J. C. McCulloch

ON THE ROAD TO ROOSEVELT DAM

ARIZONA DESERT NEAR PHOENIX

NEAR FISH CREEK HILL

Did you ever try to conceive how the bottom of the ocean would appear if the water were suddenly to recede and it became dry land? Here you have it exactly. And it does not require much stretch of the imagination to conceive that the weird cactuses, ocatillas, saguaros, yuccas, and other strange growths of the desert are the remnants of the submerged forests of the sea-bed of millions of ages agone, and one almost expects to see dinosauruses, ichthyosauruses, and other monster reptiles moving about in their shade, or to see the gigantic plesiosauruses and pterodactyls that used to paddle in or fly over the waters, or the mammoths, megatheriums, and mastodons that were wont to come and drink of, and bathe in, its cooling flood. How Doré would have reveled in this place! Possibly his Deluge pictures would have been far more wonderful had he had anything like this before him to stimulate his vivid imagination.

These ideas sprang into being as we swooped down, down, down from the ridge, mile after mile, towards the great reservoir. Those who have seen an accomplished aeroplanist, like Art Smith, alight after one of his sensational flights, when, like an eagle, he drops from an elevation of 1,000 feet or more to the grassy lawn from which he started, will understand what I mean by "swooped." Though we were on wheels, and bumped somewhat on the rough portions of the road, it was as near to an aeroplane's flight as a non-flying machine could make. And as far as manipulation of the motor was concerned, I think the manifestation of coolness, skill, and practical knowledge is in favor of our chauffeur. Sharp curves, down grades, sudden steep up-grades, precipices to the right of us, precipices to the left of us, streams to ford, some shallow and rocky,

others deep and quick-sandy — it required prompt, skilful, and expert handling.

At first before us and then to our right spread out the great lake formed by the inflowing and retained waters of the Salt and Tonto Rivers. A lake — an inland sea — yet only a small remnant of what once undoubtedly existed here. Man, in erecting the Roosevelt Dam, has simply replaced some of Nature's own masonry, which, after erecting, and using, doubtless, for countless centuries to hold in the accumulating waters of this vast inland lake, she demolished, in order to transact other operations elsewhere with the waters she no longer desired to keep imprisoned within these walls.

For thirty miles or so we rode along near to this vast reservoir, one of the greatest artificial lakes in the world, with a capacity ten times greater than that of the Croton Reservoir which supplies New York City with water, and far more than that retained by the Assouan Dam in the Upper Nile. Indeed, there is water enough stored here to cover the whole state of Delaware a foot deep, or to fill a canal three hundred feet wide and nineteen feet deep, extending from San Francisco to Chicago.

Passing by the little town of Roosevelt, we soon approach the dam. A fine roadway tops it, over which we cross and recross. It widens from the bottom up to conform to the width of the canyon, or gorge, which it dams. At the bottom it is 235 feet from left to right, while at the top it is 680 feet. Measured up and down stream, at the bottom it is 168 feet, and it extends 284 feet upwards above the lowest foundations. Its solid contents are 329,400 cubic yards. Its shape is an arch, with the curve made to resist the pressure of the water on the reservoir side, and for 220

feet its masonry is exposed to the water. The watershed that supplies the water of the reservoir is about 6,260 square miles in extent, and in 1915, for the first time, it was full to overflowing. Great rejoicings were held at this time, as for quite a lengthened period it insured water for the irrigation of the hundreds of thousands of acres dependent upon it.

From now on our road is a rocky shelf, cut out of the wild mountain side — the gorge down which the Salt River used to flow and dash and roar, in unrestrained turbulence. Now, however, only the overflow is allowed to run, and whatever amount is needed for immediate irrigation day by day. This road was constructed by the United States Reclamation Service in order to render access possible to the dam while it was in process of erection. The main work upon it was done by Apache Indians, who proved to be the most reliable workers the officials could secure in Arizona. After a long stretch of descent, it began an irregular and typical mountain course, now up, now down, winding and twisting wherever the engineers could best find good grade and course. All around us were objects of interest engaging our attention until we reach Fish Creek, where a real, rude, rough-and-ready, old-fashioned, pioneer-station meal was served. From now on for a few miles the road is a constant thriller. For a mile or so it seems to lead us into a "blind canyon" — one without any outlet. Narrower and narrower it grows, until we make a swing to the right and fairly climb up a shelf, cut out of the solid granite wall, which seemed as if it would hem us in.

This is a real climb. Though well engineered, carefully graded, and well constructed, it is a good test of motor, chauffeur, and the nerves of passengers. At the summit, off

we go again, with ups and downs, that in places remind us of the sweeping down of the sea gull, or a mechanical rendition on a sloping road of the eagle's descent in flight. Gigantic and towering rocks are to our right, sand-carved and storm-weathered, until they are demon forms for Doré to picture, and then we come to our last summit, near the Superstition Mountains, where we get our last great, wonderful, all-embracing valley view. Here is the Salt River Valley lying at our feet.

It is like an epoch-forming period in a man's life. Behind him is the great wild waste, then the restraining dam that holds back the vivifying and renewing water, and now he is on the crest, before sailing forth into life again. All its opportunities, its possibilities, its potentialities, are typified in the glorious valley ahead. Not yet developed, awaiting the quickening touch of man's hand, the vivifying influences of man's work, genius, and love, it will spring forth into fertility, abundance, and the happiness that come with work well done. Of course, there is enough of development actually accomplished to demonstrate what may and will be done in the next twenty years.

On we go through Mesa, Tempe, past the State Normal School, through the Cactus Park, recently set aside by the state and the city of Phoenix as a place where the native growths will be preserved forever, into Phoenix, the heart of the Garden of Allah — once a desolate, barren, heat-stricken waste, now one of the gardens of the world.

It is hard to realize that this region and all the adjacent country is the land of the Apaches. Here they once roamed in fearless freedom, the lords of the land and monarchs of all they surveyed, for there were few who dared to molest

or make them afraid. For centuries they had been regarded by their fellow aborigines as the most fierce and warlike, the most independent, self-reliant, and self-assertive. The Spaniards and Mexicans could do but little with them, and the United States found them a hard problem when they took possession of the land.

I have not the space here to tell of the exploits of these warlike people. Their full history will never be written. Suffice it to say that they fully understood the real art of war; the power to kill without being killed, the strategy that forever dogs the steps of the enemy, gives him no rest, falls upon him unexpectedly, and escapes without injury after dealing deadly blows. Who can forget — whoever knew the facts — that Geronimo, the last great Apache chief, with thirty-three full-grown men, eight boys, and ninety-two women and children, went on the warpath, and in less than a year had killed between three and four hundred people in the United States and Mexico, and, as Charles F. Lummis puts it:

> Despite the untiring pursuit of the most experienced and most successful Indian-fighter our army has ever had, they lost but two of their own number, killed. A dozen of their women and children were captured after a campaign whose activity and hardships no civilized war could parallel; and a mixed three-score at last came in, of their own free will, to rest from their travels. After that, for six months, the remaining twenty warriors, hampered by fourteen women, baffled the fairly frantic pursuit of two thousand soldiers, pushed by an able general, not to mention several thousand Mexican soldiers. They killed something less than a hundred people, kept Sonora, Chihuahua, Arizona, and New Mexico on the tip-toe of terror, and never lost a man!*

* *The Land of Poco Tiempo,* Charles Scribner's Sons, New York.

CHAPTER XV

THE CANYON OF CATARACTS, AND THE HAVASUPAI INDIANS

IN all ages men have sought out strange and peculiar locations for their dwelling places. In the accompanying pages many of these are described in all their quaintness, picturesqueness, novelty, and pathos. But it is to be doubted whether any home ever found by men in any period of the world's history is so wonderful, grand, strange, and picturesque as that of the Havasupai Indians in the Cataract Canyon.

Several travelers and explorers have described this aboriginal dwelling place — Garcés, that indefatigable Franciscan friar, who, feeling the burden upon his heart of the souls of all the Indians he might reach, sought them out in order to give them, through the offices of Holy Mother Church, the inestimable blessing of immortal life; Lieutenant Ives, who in 1847 came into the region to his immense amazement and bewilderment, and the physician of whose expedition had a startling and surprising adventure with the Indians; General Crook, the Apache fighter and conqueror; and Lieutenant F. H. Cushing, who, in three of the most interesting articles he ever wrote, in the *Atlantic Monthly*, told of his journey thither and experiences crossing the desert from Zuni.

It is getting on towards thirty years ago since I first

visited this canyon in the company of W. W. Bass, the noted Grand Canyon guide, and the impressions then received, often since renewed, are almost as vivid and fresh as when gained. For this is no every-day trip that one may take and class with others of like nature It is as strange, as unique, as purely individualistic as are one's experiences at the Grand Canyon, the Petrified Forest, Crater Lake, the Yosemite, or the Yellowstone.

There are three known trails into these hidden and mysterious depths — the Wallapai, Zuni, and Topocobya trails. Each is more wonderful, awe-inspiring, and fascinatingly thrilling than the others. In spite of the apparent "bull" in this statement it is perfectly true in this sense, namely, that whichever trail you last take it is the one that most impresses you, no matter how often you descend, and how much you vary the order in which you descend.

My first trip was down the Topocobya trail. A *topocobya* is the half-moon curve described by the sweep of the opened thumb and finger, and most graphically suggests the shape of the colossal rocky walls on which the trail is built, engineered, and pecked, and down which one descends at one fell swoop for over a thousand feet. It is a hair-raising spot to look at, and in those early days, when none but moccasined Indians and wild goats, and an occasional adventurous or Indian-bedeviled burro clambered up or down, and no real attempt had ever been made to render it more than a scrambling place, it was almost as risky as putting a hempen noose around one's neck, securely fastening it to a strong bough, and then jumping from an elevated position, just to see how it feels to dangle without the ability to touch bottom.

The Indians were our guides, and they brought their own ponies and burros for our conveyance from the foot of the trail, down the long, winding, rocky canyon stream-bed which, mile after mile, went deeper and deeper, cutting through stratum after stratum, some of the walls as regular as if laid by gigantic masons, others crowned with figures as wild, rugged, and fantastic as if demons and fiends, fallen angels and fallen men had sought to construct Gargantuan gargoyles of all the Quilps, Quasimodos, and other hideous and repulsive figures of fiction.

At last, at a depth of nearly 5,000 feet below the elevated plateau from which we had descended, the village of the Indians was reached. Our journey all the way down had been practically waterless, save for a few fugitive bucketfuls, conserved by nature-made rock reservoirs in shady places. Suddenly the murmur, rush, splash, and gurgle of running, flowing, dashing water was heard, and on one side of the narrow canyon, under immense patriarchal cottonwood trees, a thousand springs burst forth, sparkling and free, from their imprisonment beneath the rocky strata. Rushing together, as though with set purpose and prearranged accord, they united and formed quite a sizable stream, which immediately headed away down the canyon, lined on either side with a dense jungle of willows, ten, fifty, a hundred yards wide, and the green of which contrasted joyously with the vivid reds and dark chocolates of the sandstone walls. Never more than half a mile wide, and narrowing and widening again in irregular fashion, the walls, sheer precipices upwards of two thousand feet high, rising then on sloping taluses to walls further back, another thousand or more high, and these back to others still higher,

Photo by F. H. Maude

THE HAVASU — BLUEWATER

WHERE DWELL THE HAVASUPAI — THE PEOPLE OF THE BLUEWATER

Photo by George Wharton James

MOONEY FALLS, HAVASU CANYON

what a site for human beings to have selected as their chosen dwelling place! Yet here from time immemorial have lived the Havasupai — *pai,* people, of the *haha,* water, *vasu,* blue — the people of the blue water; or, as Cushing poetically termed them, "the Nation of the Willows." Two to three hundred in number, seldom going over the larger number, and generally keeping nearer to the smaller, living in their brush shelters, or *hawas,* cultivating corn, melons, onions, beans, peaches, and making a rude fibrous bread from the mescal (the *Agave Americana*), eating acorns, grass seeds, pinion nuts, the fruit of the *yucca baccata,* and roots, rabbits, deer, and other game when they were fortunate in their hunts, keeping themselves largely to themselves, friendly with some outside tribes and trading with Navahos, Hopis, Wallapais, and Paiutis, but hating and dreading Mohaves, Utes, and Apaches, they had remained here almost secluded and unknown for centuries.

Since that first experience I have visited them many times; shared their simple hospitality; watched them in their religious dances; engaged with them in their ceremonial "sweat-bath" — as fine a Russo-Turkish bath as I ever enjoyed — studied their primitive cosmogony; and collected some of their many fascinating myths, legends, and folk lore.

A quarter of a mile or so below the last *hawa* of the village is a waterfall, caused by the dashing of the *Havasu* — blue water — over a sudden drop in the canyon's floor. A short distance beyond is another fall, wild, rugged, picturesque, where the stream is broken up into irregular masses and flows and falls a hundred feet through a tangled mass of bushes, vines, and towering cottonwood

trees. A mile further and one reaches the most exquisitely beautiful, gloriously alluring waterfall my eyes have ever seen.

Those who have seen Mossbrae Falls, near Shasta Springs, on the Sacramento River, coming down from Portland, Oregon, on the Shasta route of the Southern Pacific, can form a conception as to its supernal beauty. For it is Mossbrae enlarged many times and put into a more sublime environment. Instead of one column of water there are three hundred, four, five hundred, varying according to the extent of the stream's flow, and no one column exactly like any other.

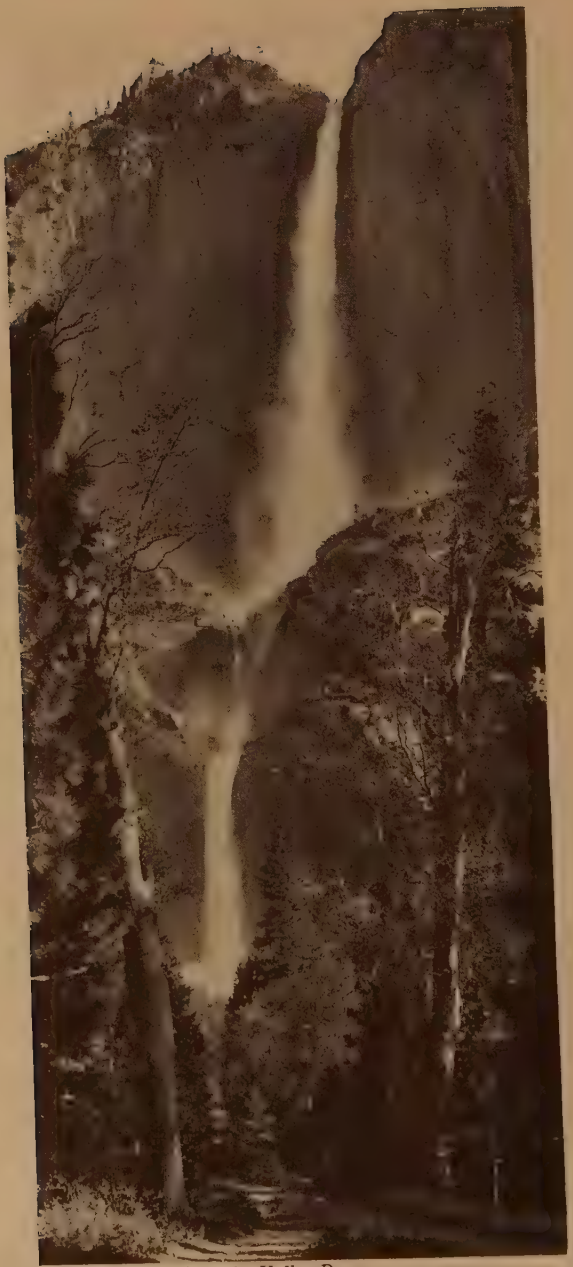
At the precipice's edge, where the lip of the fall should be, the water is spread out over a rough and rugged table, bestrewn with trees, shrubs, vines, and the fantastic forms of limestone accretions that have accumulated here during the centuries. The water is heavily charged with lime and silica, which coat everything it touches and thus produce "petrifications," so-called, of a thousand and one shapes and sizes. In the region of this waterfall this process has been unusually active, for the whole width of the canyon, 1,000 feet or more, and for a distance of more than half a mile, is literally full of them, cemented together by the material that made them, and mixed up into a chaotic mass with the sand and silt that have washed down at flood times.

The fall is from 150 to 175 feet high and fully 500 feet wide. Though Mossbrae suggests it, there are marked differences that set it apart as a fall unique in the scenery of the world. The very rock behind it, over which it falls, seems to be a petrified waterfall of a dainty reddish-tinged sandstone. It has all the appearances of a waterfall, and it

Courtesy of H. C. Tibbitts

OVERHANGING ROCK, GLACIER POINT

YOSEMITE NATIONAL PARK



Courtesy of the Yosemite Valley Ry.

THE YOSEMITE FALLS

Courtesy of the Yosemite Valley Ry.

CATHEDRAL SPIRES, YOSEMITE VALLEY

Courtesy of H. C. Tibbitts

HIGH SIERRA IN YOSEMITE NATIONAL PARK

Photo by author

BRIDAL VEIL FALLS

HAVASU, OR CATARACT, CANYON

Photo by author

THE WALLAPAI TRAIL TO HAVASU CANYON

Photo by F. H. Maude

PAGATOCOBA'S HAWA, HAVASU CANYON

certainly was formed by the waterfalls of the past. The moist heat of the canyon is so conducive to plant and tree growth that in every little crevice where earth has washed down and found lodgment a vine, a shrub, or a tree has sprung forth and grown with fervent exuberance.

Then something has occurred to expose and wash out a portion of the roots from their hiding places, and they have trailed over the rocks or in the water. The lime-charged water has then gradually covered them with its hardening surface; the spray has dashed over the leaves and covered them, and limbs of trees, small sticks, etc., that have washed down and lodged have likewise become petrified, and then, over the lips of the fall, as the water has dashed down, these accumulations and accretions have formed umbrella-like protrusions from the face of the cliff, large, medium-sized, small, down to tiny baby ones, with trailing, lace-like edges — fairy lace that absolutely crumbles at a touch, or vanishes with a strong breath of wind. And these "umbrellas" are found at all elevations in the most picturesque, haphazard arrangement; yet the general effect is harmonious in the extreme. So there is the wonderful fall, the water foamy white, pouring down, through, over a hundred, five hundred small and large channels, a few of the larger masses dashing down in unbroken columns to the pool beneath, but the larger proportion falling only ten, twenty, fifty feet upon one of these rocky umbrellas, or aprons, and bounding off again in graceful curves in dashing spray and water dust, to mingle with the mist from other broken columns. Over all the water hang the admiring and protecting trees, while on each side and behind tower the sandstone and limestone cliffs, in terraces, a thousand, two thousand feet at a step,

until they lead the eye to the peerless Arizona sky overarching the whole glorious and soul-expanding scene.

It is entrancing, enchanting, bewitching, and though I have gone back to it again and again, in the past twenty-five years, it never loses that first rich quality of fascination, and I sit by its side, at its foot, or on the far-away cliff, and watch its dainty beauty with as much pleasure and joy as when I first beheld it. The Indians call it *Wa-ha-hath-peek-ha-ha,* the Mother of Waterfalls — the Americans have given it their one rich, classic, time-honored, and brilliantly imaginative name, Bridal Veil Falls.*

But there are two other great falls in this canyon that demand a visit. The next one is about a mile further down, and is called Mooney Falls, after a miner of the name who lost his life here in a most tragic manner. From two to three hundred feet in height, it leaps over the cliff in one glorious column of sparkling, sun-kissed, lacy water, that suggests designs innumerable for those who create the artificial adornments of women's lingerie.

None but those who really study waterfalls can know the rare charm and steady beauty they possess. Most people have the idea, and many writers confirm it, that when a stream tumbles over a cliff it is a wild, chaotic mass of water and spray. Never was there a greater mistake. Niagara is never more serene and calm than when its columns of water stand upright. And so with these Havasu Canyon falls. There is one divine outflow of energy when the water leaves the level and begins to fall. Then it

* Just before going to press, my Grand Canyon friend (Mr. Bass), informed me that a fierce flood had completely destroyed (for the time being, at least) the charm of this inexpressibly beautiful waterfall. I hope, however, that a few years will see it restored. Nature originally built it, and she can do so again.

divides into numberless comet-like forms, the foamy head and nucleus of each one as clear as any individual star in the heavens, followed by their fan-like tails, combed out finer and finer towards the end, and disappearing in the general mist exactly as real comet-tails disappear in the atmosphere.

The friction of the air in falling, combs and spreads out the water. Each of these comets holds its place and falls in as orderly, steady, and unconfused a manner as each soldier takes his place in regular drill. The eye can follow each one — though of course it must be done rapidly — as certainly and surely as it can follow a horse on a race-track. The comet is the general form in the upper part of the fall, but lower down these become so attenuated by air friction as to assume other misty but distinctive vapor-drapery forms, into which sunlight darts a thousand brilliant hues, air contributes a rare fineness, and the water becomes an entirely different thing from the solid though fluid substance with which we are commonly familiar.

The next fall is several miles farther down, and is known as Beaver Falls, because of the numbers of these active rodents that used to operate there. It is of the same style as Bridal Veil Falls, but less impressive in height and width.

Still farther down the Havasu enters a narrow, almost millrace-like gorge, with sheer walls of thousands of feet, rising above its foam, and after a mad race in this confined space, shoots its clear, though limy, waters into the muddy, turbulent stream of the great Colorado, which speedily absorbs them and carries them out to the far-away Gulf.

This canyon has been made easily accessible to one used to horseback riding and camping out. W. W. Bass, Grand

Canyon, Arizona, will make arrangements for the conducting of individuals or parties, or the same arrangements may be made at El Tovar, the Fred Harvey Hotel at Grand Canyon. The distance from this hotel is about fifty miles, thirty-five of which may be made by wagon, and the rest of the way on the trails by saddle animals. Necessarily it is a camping-out trip.

CHAPTER XVI

THE PETRIFIED FORESTS OF ARIZONA

THE ordinary layman says *petrified,* the scientist, *fossil.* The dictionary defines a petrification as that which has been converted or made into stone; from *factus,* past participle of *facere,* to make, and *petra,* rock. A fossil, on the other hand, is something dug out of the earth, or, specifically, in late geological usage, anything that has been buried beneath the surface of the earth by natural causes or geological agencies, and which bears in its form or chemical composition the evidence that it is of organic origin.

As I am a layman, and the prime thought in connection with the wood of this ancient forest is that it has been changed into stone, I shall continue to use in the future, as I have in the past, the name *Petrified Forest.*

This, certainly, is one of the wonders of the world, for here are acres — scores, hundreds, thousands of them — dotted over, lined, seamed, and permeated with the logs of this vast forest of the past — fossilized, petrified, agatized, thousands of tons of them already exposed to the gaze of man, and doubtless many thousands more waiting for the slow processes of nature's exhumation.

These petrified forests are closely adjacent to the main line of the Santa Fe Railway, and not far from the small station of Adamana. Adam Hanna was an oldtime pioneer of the region, who used to take tourists in the early day to

see the wonders near his ranch. His good wife, Maggie, who used to sing in the Methodist church choir of one of the smaller churches in St. Louis, Missouri, would cook for them and occasionally "fix up a bed"; so, when it was decided to put in a station at this point and the Santa Fe officials wanted a name, this English-ified rendering of Adam's two names was suggested and straightway adopted.

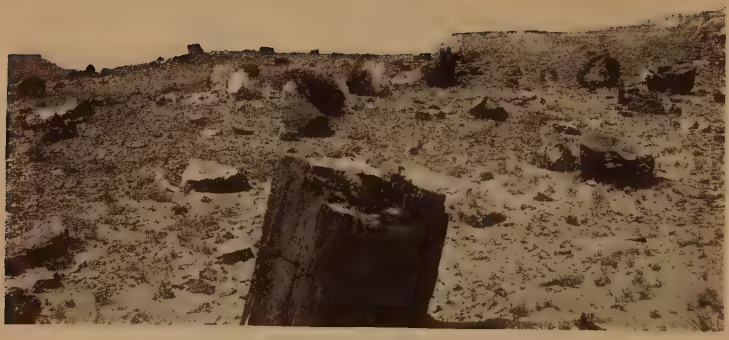
It will be noticed I have used the word "forests." Possibly it is all one forest, though it covers so large an area, but the uncovering process, so far as it has now gone, has revealed the petrifactions in three separate localities; and when John Muir came here a few years ago for the benefit of his ailing daughter, he rediscovered another petrified wood area, that the inhabitants of the region knew nothing of, though it was fully described in Wheeler's Survey, many years before, and I had visited it and secured a good sized log of its wood, which for years has stood on my lawn walk in Pasadena.

The Petrified Forest area is over ten miles square, covered with fallen trees, generally broken into somewhat irregular lengths, scattered in all conceivable positions and in fragments of all sizes, the sections varying from two to twenty feet long.

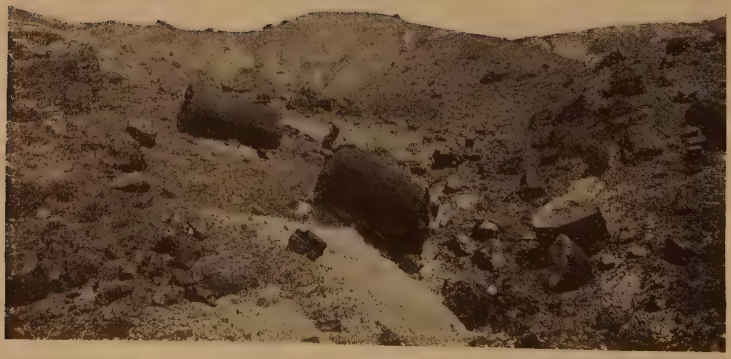
It is about twenty miles from Holbrook, Apache County, Arizona, and is naturally subdivided into three parts, commonly known as the "Petrified Forest," "Chalcedony Park," and "Lithodendron [stone trees] Valley." The latter section is nearest to the little hotel at Adamana. The drive from this side-station is about five miles, part of it being over a sort of plain with rugged cliffs to be seen in the distance, and the Lithodendron Valley is between two of

Photo by author

THE PETRIFIED BRIDGE, ARIZONA



THE PETRIFIED FOREST, ARIZONA



THE PETRIFIED FOREST, ARIZONA

these bluffs. There are all kinds of freaks of erosion in the peculiar colored soil of which these bluffs are made, one of them looking much like an eagle with outspread wings. Upon reaching the region of the petrified trees it is easy to believe that there are literally hundreds of thousands of specimens scattered on each side of the valley and up and down the slopes.

Some of the fossil trees are quite well preserved. The exposed part of some of them measures from one hundred and fifty to two hundred feet in length and from two to four and a half feet in diameter, the roots sometimes being fully exposed and the diameter of these portions most surprising.

The colors are beautiful and exquisite in the extreme. The state of mineralization in which much of the wood exists almost places certain pieces in the class of semi-precious stones. Not only are chalcedony and agates found among them, but many approach the condition of jasper and onyx.

On the further side of one of the slopes is the interesting Petrified Bridge. This consists of a large petrified tree trunk lying across a canyon and forming a natural foot-bridge on which men may cross. This bridge is on the northeast side of one of the mesas near its rim. The trunk is in an excellent state of preservation, and is complete to the base, where it is partially covered, though it shows clearly the manner in which the roots were attached while the tree was growing. The total length of the tree that is exposed is one hundred and eleven feet, more than sixty feet of the upper part of the tree resting upon the left bank of the canyon. Its diameter at the base is about four feet,

and at the upper end is reduced to about eighteen inches. At about the middle of the canyon the tree measures ten feet in circumference. Most of the trees are split across in sections or blocks, and there are four of these transverse cracks in the "bridge."

It is estimated by scientists that these trees grew many millions of years ago, in the dim ages when the earth was in the process of making, and earthquakes, uplifts, and subsidences of the surface of the earth were common. In some convulsion of nature, possibly a great tornado or flood, the whole forest area where these trees grew must have been flooded to such an extent, and for so long a period of time, that the roots of the trees rotted and allowed them to fall, or perhaps the flood was so tremendous in force that it washed away the earth and floated away the trees from the place where they grew to this region where we now find them.

The most careful searching has failed to find few, if any, branches of the trees, and but very few of the cones that they used to bear, therefore it is assumed that these were broken off by the turbulent movements of the flood and carried away on the surface of the swirling waters. The trees being lodged in a place where they could not escape, indications point to the fact that they were submerged in water for many, many centuries. The land surrounding the area of submergence undoubtedly contained many minerals, and as these were exposed to the atmosphere and disintegrated and rusted, they colored the water in which the trees were lying. It is well known that iron rust is a deep red; copper gives brilliant yellows and purples, while other minerals give equally vivid and beautiful colors. Combined

with the color-giving minerals was a good deal of silica or lime, also held in solution in the water. By the exercise of that wonderful law called capillary attraction, the wood fiber, as it decayed and washed away, left place for the brilliantly colored matter. As days, weeks, months, years, centuries passed the process of change from wood fiber to solid stone, beautifully colored, took place.

In the meantime there were great volcanic disturbances in this region, and vast quantities of volcanic ash were cast out over the whole area until the trees were buried in it many feet deep. As more millions of years wore away the region sank into the primeval ocean and sandstones and limestones were washed over the sea bottom and deposited, until the forest was buried to a depth, some scientists say, of over twenty thousand feet.

Then this period of subsidence was arrested and reversed, and the submerged area began to lift again out of the great inland sea. This must have been a time of great storms and atmospheric conflicts, for little by little the layers of sandstone and limestone were disintegrated and carried away, perhaps to form the sands of the Mohave and Colorado deserts. Finally, previous to our own historic age, this process of washing away the accumulated strata of the Petrified Forest region was arrested and the trees were left exposed as we now see them.

The forest is now a national park and thus guarded from vandalism, but there are so many millions of fragments scattered about on every hand that no objection is made to visitors taking away small specimens.

CHAPTER XVII

THE LURE OF THE ARIZONA DESERTS

LITTLE by little the Arizona desert is coming into its own. People are beginning to understand it, to love it, instead of fearing and hating it. It is no longer "the country that God forgot," but the thoughtful and discerning are seeing in it "the Garden of Allah." Its wide expanses, eloquent silences, glorious colorings, purifying winds, stimulating sunshine, nights of calm allurement, content and soothing, its luminous stars, its radiant purity, its incomprehensibility, mystery, and dominating power in most singular fashion take full possession of mind, soul, and body.

Arizona, in its desert areas, is a land still in the making; the work is not yet done; one can see the primitive processes in operation; the hand of the Divine is still upon the soil. And while in the summer months the temperature is high, there is yet an allurement about the desert climate that those who know it can never resist. The nights are so cool, refreshing, and pure, one feels that here, indeed, is the air the angels breathe; its purity is to be felt, a definite, distinct, positive reality that thrills with its potency. Then the coloring of the desert enchants the senses. Morning and night, sunrise and sunset, are alike gorgeous and brilliant. One never becomes blasé to their panoramic splendors; their startling surprises; every morning one arises and antici-

pates, waits, and gloats, eagerly drinking in the radiant glory of the Day King's triumphant approach; and at night, weary and tired, perhaps, after a day's hard labor, or exhausting journey, looks just as eagerly and delightedly upon the great ~~orb~~ MOON'S GLORIOUS farewell ~~pyrotechnics~~ as it disappears behind the western mountains.

But regardless of sunrise or sunset the desert country is a rioting wealth of color — the varying sands and clays of the valleys, the equally-mingled grays, reds, blues, greens, oranges, and lighter yellows of the mountains. Played upon by the heavenly searchlights, tinged with atmospheric colorings produced by the very fountains of nature's electricity, they dazzle the eyes and thrill the senses as only those who have seen the gorgeous color displays of the San Francisco Exposition can begin to conceive. And yet the artificial displays by the Golden Gate are trivial and childlike compared with the thousand-square-mile areas illumined by God's own instruments in the Arizona deserts.

Here is color supreme. Titian, Tintoretto, Reynolds, Velasquez, and all the masters, ancient and modern, would here have reveled and delighted in, and been intoxicated by, the vivid brilliancy, the divine abandonment of color-richness so lavishly and extravagantly bestowed upon so gigantic a canvas. And the phantasmagoria is never quiescent, never still, never twenty seconds the same. Every moment sees some fresh effect beginning, continuing, or produced. All is alive — intensely, vividly, potently, yet *silently* and mysteriously alive. Oh, that sense of desert aliveness, though silence, solitude, and sublimity reign supreme. The expanses are vast and almost awful in their immense reaches. The mountains stand as though they had been placed there when

God laid the very foundations of the world, and in His presence they had been hushed into a silence they had never since dared to break. The sandy area, almost treeless, bushless and flowerless, lies at the mountains' feet, feeling the solemn mystery over which only the faintest zephyrs dare to breathe. And yet over and in and through it all there is a sense of vivid, active, dominating, radiant power, alive to the very innerness of things, that captures and possesses the soul. What it is you cannot tell, and analysis gives neither elucidation nor clue to the mystery. Yet how wonderful it is to feel it, to know it, to live in it, and to absorb its marvelous and thrilling potency!

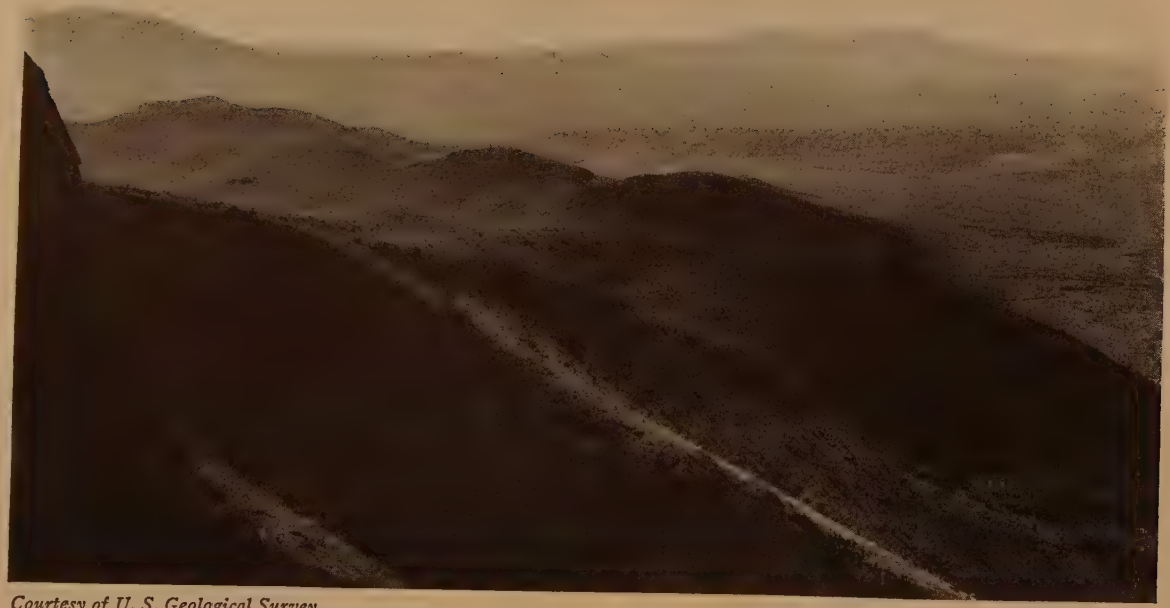
Then the entrancing and soul-satisfying calm of the desert! Who can describe it? Watch the crowds in any American city. How volatile, restless, mercurial, unsatisfied, agitated they are. Ever moving, rising up, sitting down, peeping in, pushing on, discontented when in motion, unsatisfied to be at rest, played upon by every whim of fancy, with no settled purpose, as if moved by the fitful dreams and conjurations of fever in their blood, they typify eternal discontent, dissatisfaction, unrest. Even the more thoughtful and mentally alive find it impossible to resist this ever-present, agitating influence. Ministers, lawyers, doctors, judges, educators are almost equally in a state of agitation with the commoner masses of the people. Calm, repose, serenity are unknown. Rush, hurry, bustle, haste, activity, to the point of nervous exhaustion are exhibited everywhere. Doctor Blackgown's pulpit is vacant for three months, for his physician has sent him on an ocean voyage to quiet his nerves. Judge Bigwig is resting for two months at a sanitarium, and Professor Snozzlegozzle is recuperating

Courtesy of U. S. Geological Survey

THE DESERT COUNTRY, ARIZONA

Courtesy of U. S. Geological Survey

THE DESERT COUNTRY, ARIZONA



Courtesy of U. S. Geological Survey

THE SAN PEDRO VALLEY

FROM WEST SIDE OF BLACK RIDGE

in the mountains. The banker, tradesman, chemist, feel the same jumping-jack influence. Business is conducted on the hop, skip, and jump, as if we were all marionettes suspended from a wire and worked from below or above by a jerky string, and stability, equipoise, and serenity — how I revel in the thought behind that last sublime word — are almost unknown.

But on the desert how different. Have you ever felt a sweetening influence flow into your inmost soul from the presence of a good man or woman when you were angry to fierceness, mad enough to strike? Have you ever seen a fretful child, querulously wailing or spasmodically sobbing out of sheer physical irritability or exhaustion, placed on the shoulder of a loving, calm father, or the deep-lunged bosom of a restful, unperturbed mother, and watched the transforming miracle that bade the irritation disappear, the wailing cease, and sent the child into delicious, satisfying slumber?

That is what the desert does for its devotees. Its fierce day heat seems to purge the blood of its mercurial fever; to put the calming hand upon the heated brow, the restraining and soothing influence around the whole physical nature — heart, brain, nerves, blood vessels, skin, everything feels the sedative power. And, as if by magic, mind and soul also feel the inflowing of *serenity,* content, restfulness — the peace of God which passeth all understanding. It is as if the finite man here came into personal, intimate touch with the reservoirs of infinity, the stores of the Divine, the spiritual treasure-houses of the ages, the recuperating, rejuvenating springs of everlasting youth. Well might the Arabs call the desert the Garden of Allah. They have

learned its secret. It is the land where "everlasting spring abides, and never withering flowers," but they do not believe that

> Death, like a narrow stream, divides
> This blessed land from ours.

They enter into, take possession of, are taken possession of, by the serene influences that occupy the land and thus feel themselves in the chosen place of God.

Then, too, there is something enlarging, ennobling, expanding to the mind and soul in the vastnesses of the desert. The Delectable Mountains yonder are fifty, seventy-five, a hundred miles away, and at one sweep the eye covers all the intervening space between; yonder peaks are nine, ten, eleven thousand feet high in the crystal blue of the Arizona sky; yonder "devil's whirligig," a sand-spiral on the desert, is twenty-five miles away, and the little cloud of dust tells of a moving prairie-schooner fifteen miles off. Distance is annihilated, miles forgotten, in the pellucid atmosphere of this laboratory of pure air. Hence there comes a corresponding enlargement of mind and soul; one no longer feels any of the "cabin'd, cribb'd, confin'd" influences of the cities.

As one can move with a new sense of freedom, breathe in a larger fullness of air, rejoice in a greater expansion of lungs, a quickening of the oxygenating influences in the blood, and a stimulation of the brain cells, with a corresponding soothing of the nerves and increase of vigor in the muscles, so does he feel the enlargement of the lungs of the mind, the quickening influences upon the intellect, the stimulation of the soul, the expansion of the conceptions, the imagination, the powers that make the man superior to

the brute; that bring out the qualities of the Divine over and above the human.

It must be in the silence and solitude of the desert there are few things to distract the attention. One can focalize as nowhere else. As Joaquin Miller once expressed it: he went to live on the quiet mountain heights above the city of Oakland, away from the disturbing influences of men, the distraction, cares, pleasures, social allurements of men, in order that, in the silence and solitude, he might listen to the voice of God. In the city, the theater, the opera, the concert, the show, the vaudeville, the dansant, the revelry, the wine cup, the feast, "woman, wine, and song," allure, distract, dissipate, destroy. But in the desert the voice of God is supreme, and the human seems to be attuned to listening — a rapt, attent Saint Cecilia-like attitude — of readiness, willingness, gladness to hear the Voice Divine.

The first thought, however, that takes full possession of man when he sees the desert in all its mysterious vastness for the first time is *that life within its boundaries is difficult, if not impossible.* He cannot see any other animal life than the lizard, horned toad, snake, and ant. He notes the scarcity of plant life, the dearth of trees, the rarity of flowers.

And whatever plant life there is, is armoured and protected with fierce thorns and prickles, so that none can touch it with impunity, without hurt or injury. The fight for mere existence is strongly in evidence. Heat and drought say die; wild animals would make food of it and thus destroy it. But Nature seems to love sturdy resistance in the preservation of life. She endows these desert plants with heat-resisting cuticles, with moisture-seeking and

moisture-gathering roots, that travel and grow long distances; she clothes them with spines and thorns that cut and wound as the claws of the wildcat and tiger. Hence they live, grow and multiply, each after its kind, drinking in every drop of moisture that falls during the year; marvelous examples of conservation of energy, and perfect utilization of every source of supply.

Thus Nature becomes man's teacher. She offers a challenge to the superior being. Can the lizard and horned toad, the greasewood and mesquite, the cactus and the yucca live where man can not? Are there any conditions of life — where *anything* can live — superior to man? If so, wherein lies man's dominion, his control, his vaunted superiority?

These wild denizens of the desert areas are not only a challenge, but also a means of instruction. They suggest in themselves the law of adaptation. Little by little our scientists are beginning to grasp the marvelous significance of this fact — that Nature adapts herself to circumstances and environment. The first cactuses that grew on the desert doubtless perished by thousands, but a few persisted. They had a tougher strain than their companions, and they resisted heat, drought, winter's frost, and the attacks of animals alike. They became wise, subtle, crafty in their self-preservation.

This is no place to enter into a scientific explanation of the wonderful resources and adaptations of the various cactuses to the trying life of the desert. I merely wish to suggest the apparently unsurmountable difficulties the plants actually overcome. Their brave struggles and successful achievements invest them with a rare and pathetic attrac-

tion. One feels they are akin to man in their determined resistance to powers that combine to crush them out of existence.

Rains come but seldom. A year's rainfall will vary from one or two inches to a maximum, rarely reached, of twenty inches. Heavy rains occur so seldom that they have an almost negligible effect upon the soil moisture, as it is evident that only such rains can supply water enough to penetrate to any depth and afford any appreciable and reliable source of supply. The frequency of light rains is great, and these generally make up the larger part of the sum total of the year's rainfall. These may be compared to tantalizing tastes, exciting and stimulating the appetite to the extreme, suddenly withdrawn without the slightest real satisfaction of the longings they have aroused.

Who does not know, in himself, the arousement of such expectations and their absorbing and anticipatory power, and, also, alas! the utter desolation of soul, depression of spirit, and weariness of body that come with disappointment? If plants are in any way akin to man — and who would question that life makes all living things akin — what must be the continual experience of these desert species in their alternate hopes and despairs, their arousements of expectations that are seldom lifted to gratification and satisfaction?

When these tantalizing rainfalls are considered in connection with the burning temperatures of the desert in the day time, alternated with the rapid night radiations, which pull the thermometer down with startling speed, the mere struggle for existence grows more and more wonderful, and success, when achieved, more remarkable.

The aids to these successes of life persistence are wonderful in the extreme, and have been suggested by the studies of such students as Merriam, Coville, Thornber, McDougall, Spalding, and others of the Desert Botanical Laboratory at Tucson, Arizona. They deal with the influences of altitude, the ability to store water, the breathing power of the plants, the habits of roots, the development of resistant powers against the salt and other adverse chemical elements in the soil, etc.

Seeing the plants thus successful in maintaining life in the desert, man, boldly and fearlessly, has accepted its challenge and begun to subjugate it. He has swept over the deserts of Arabia in search of trade, and his caravans have defied heat and drought, sandstorm, and sirocco and have shuttled back and forth according to his will. Here and there man has found springs on the desert, and inch by inch has wrested away from the Heat and Drought Demon his control, making date palms, cocoa palms, and tropical flowers grow in riotous profusion.

In other places he has engineered vast canals of water upon the arid acres, miles, leagues, and has transformed the barren sands into fertile fields that are the wonder and amazement of the world. With the blind eyes of his boring tools he has penetrated a thousand, two thousand and more feet into the bowels of the earth, has found artesian fountains there which have shot up their refreshing and vivifying waters by the millions of gallons, hourly, to aid man in his miraculous work of destroying — reclaiming — the desert.

And when man so triumphs, just so soon as he holds the upper hand, Nature bows down in reverent obedience. The

very heat is made tributary to man's power and subservient to his wishes. The greater the heat, the more wonderful the growths and the sweeter the crops. The grape, the pomelo, the canteloupe, the water-melon, the date, the beet, are each and all the sweeter, the richer, the more delicious for the fervid heat that is now man's servant instead of his master. There are no grapes like desert grapes; no pomelo so sweet and free from bitterness as the desert pomelo; no melon so rich and luscious as the desert melon; no date so abounding in exquisitely flavored sugar as the desert date.

Nor does man long stand in awe of the heat as far as his own comfort and pleasure are concerned. He builds cunningly contrived houses that, with double roofs, porches, patios and arched colonnades, shut out the sun's rays. He cools the air with electric fans and bubbling fountains; he keeps his food in ice chests and concocts refreshing drinks of ambrosial quality. Then with his electric lights he turns night into day, according to his will, and works in the absence of the sun, and sleeps in cool content when day dawns. Oh, a daring, a defiant, genius is this pigmy man when once his interest, his will, his spirit, are aroused!

CHAPTER XVIII

THE COLOSSAL NATURAL BRIDGES OF UTAH

FOR a century or so the Natural Bridge of Virginia has been regarded as the most remarkable piece of Nature's engineering of this character within the boundaries of the United States. Yet here, as in some other departments, further knowledge of our vast domain has compelled a revision of our earlier conceptions. There are several natural bridges in the west that far surpass in grandeur and wonder their more famous eastern counterpart, and yet it is only as recently as 1904 that the outside world knew anything of the remarkable bridges of southern Utah. Then, in the August *Century Magazine,* an article appeared which did much to awaken interest in these wonderful arches of Nature.

It was not, however, until 1905 that anything was done in a systematic way to render them famous by accurate exploitation. In that year my good artistic friend, Harry L. A. Culmer, of Salt Lake City, was sent out by the Salt Lake Commercial Club for the purpose of securing photographs, sketches, and paintings which accurately would represent them. This expedition was supplemented in 1907 by one under the auspices of the University of Utah, from whose report by Professor Byron Cummings some of the following quotations and accurate measurements are taken.

These bridges were first seen by white men in 1883, yet

they have been here for centuries. The whole region is one in which I have ridden for days, thrilled and delighted with the marvelous sculpturings that Nature has here indulged in. The two most southeasterly counties of Utah are a vast principality in themselves, covering 11,784 square miles, or one-seventh of the entire state. The population is so small as to be less than many a country town in the East or Middle West. The greater part of the surface of these counties is a high plateau, 5,000 to 6,000 feet above sea-level, formed of rich red sandstone. From this plateau rise remnants of still another and higher plateau or mesa that in places cover large areas, but for the most part stand out as isolated cliffs.

To quote Professor Cummings:

> All the softer portions have been washed down and used to help form the plains below, while the harder parts still remain, worn into mighty monuments, castles, domes, and spires that lift their heads far above the lower mesa upon which they stand. . . . In comparison with this handiwork of time, the celebrated "Garden of the Gods" (in Colorado) pales into mediocrity.*

So is it with the Natural Bridge of Virginia when compared with the colossal spans of this Utah wonderland. In 1903, a good friend of mine, Horace J. Long, then a mining engineer, now a successful merchant of Mason, Nevada, was engaged in prospecting and placer-mining on the bars in the canyons of the Colorado River. The nearest post-office was at Hite, Utah, fifty miles away. In one of his wearisome rides for mail Mr. Long fell in with a cattleman, named Scorup, who, in the course of conversation, told him

* *The Great Natural Bridges of Utah,* by Prof. Byron Cummings. Bulletin of University of Utah, Nov., 1910.

of certain great "arches" which he had seen near the head of White Canyon. It took Mr. Long some time to get it into his head that by "arches" Scorup meant bridges, but when he did he decided to visit them. It was a long trip from Dandy Crossing, on the Colorado, occupying a large part of three days, and as they approached

Scorup himself showed signs of nervousness, as if apprehensive that his memory had magnified the size and grandeur of what he had seen eight years before, and had thus prepared a disappointment for them both. The canyon varied from perhaps three hundred to five hundred feet in width, and had many curves and abrupt changes of direction. The walls rose to a perpendicular height of about four hundred feet, and in many places far overhung their bases. The bottom was very rough and uneven, and at that season a considerable stream of water was flowing in a narrow channel, cut in most places to a considerable depth below the average level.

Pushing their horses as rapidly as possible up the canyon, and eagerly making their way around the masses of debris, which in many places had fallen from the cliffs above, the travelers proceeded about a mile when they rounded a short curve in the canyon wall and had their first view of one of Scorup's arches. Extravagant indeed must have been their expectations to experience any disappointment at sight of the colossal natural bridge before them. Yet, from the scenic point of view, this bridge was the least satisfactory of the three which they visited. Its walls and buttresses are composed of pinkish sandstone, streaked here and there with green and orange-colored moss or lichens. But its outlines are quite irregular; the projecting walls of the canyon interrupt the view, and the tremendous mass of stone above the arch tends to dwarf the height and width of the span.*

This was the bridge they named Caroline, or Carolyn, in honor of Scorup's wife, but the government officials have given it the Hopi name of "Kachina." It has a span of

* The *Century Magazine*, August, 1904.

Courtesy of U. S. Geological Survey

NONNEZOSHIE NATURAL BRIDGE, UTAH

Courtesy of U. S. Geological Survey

EDWIN NATURAL BRIDGE, UTAH

Courtesy of U. S. Geological Survey

AUGUSTA NATURAL BRIDGE, UTAH

156 feet from side to side, and ninety-eight feet in the center, while the total height of the bridge is 205 feet, with a width on top of forty-nine feet.

Sharp corners and broken lines here and there in the arch and buttresses show the unfinished work of the artisan. Nature has not yet given the final touches; but wind and storm and driving sand will continue to chisel and polish until the lines are all graceful curves, adding greater beauty to the most massive of the bridges. Beneath its broad arch, a spring of cold water invites one to "bide a wee and dinna fret."*

Two miles further up the main fork of the canyon is the Augusta, or Shipapu, Bridge. The first is the name given by Long, in honor of his wife, while the latter is the official designation.

This span is 157 feet high and 261 feet long at the bottom. It is 222 feet from the creek bed to the top of the bridge, and the road bed is twenty-eight feet wide. It is the crowning glory of the three bridges. It combines massiveness with gracefulness of proportions that give an altogether pleasing and satisfying effect. * * * One climbs to the cliff above and watches the play of sunshine and shadow upon the warm coloring of the rich reds and browns of the enduring sandstone that forms its arch and buttresses and comprehends the gracefulness of its outlines and proportions as a whole, and he seems unable to tear himself away from the spell its might and beauty throw around him. †

Some six miles from the Kachina Bridge, up in Armstrong Canyon, about three miles above where it opens out into White Canyon, is what Long called "The Little Bridge," now officially entitled "Owachomo."

It is a graceful structure, having a span of 194 feet and an elevation of 108 feet. This long arch of sandstone is only ten

* *The Great Natural Bridges of Utah,* Bulletin of the University of Utah, Nov., 1910.

† Ibid.

feet thick in the center; and thus one sees how these proportions give an impression of lightness that is most pleasing to the eye. Near it are domes and turrets fashioned by the same powers that produced the bridge; and nestling in a cave worn in the sunny side of the cliff near one end are the deserted homes of a Cliff-Dweller's village.*

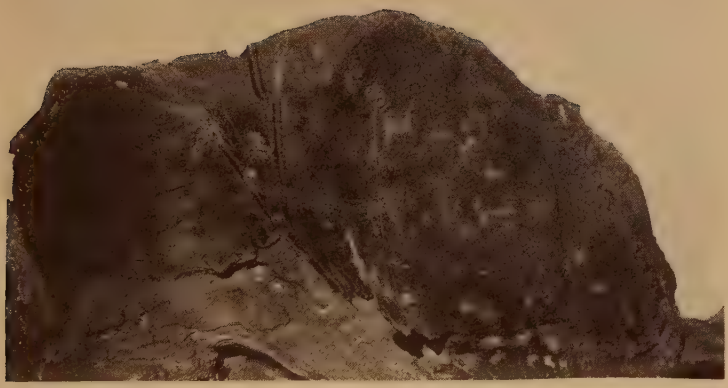
These were the three bridges disclosed by the Long expedition, but still another, grander and more majestic still, was discovered by the Utah Archæological Expedition of August, 1909. This is known as the Nonnezoshie and is located northwest of Navaho Mountain, in the extreme southern part of Utah, near the Colorado River.

President Taft, by proclamation May 13, 1910, set aside this arch with the land about it as "Rainbow Bridge National Monument." In appearance it is not so much a real bridge as the structures in White Canyon, because the top of the span is not level. It is a graceful arch of magnificent proportions, 308 feet high and 274 feet long, that has been chiseled out of the cliff under conditions similar to those that have produced the White Canyon bridges. Here, however, the sandstone has been more yielding and the forces at work, perhaps, more constant, so that erosion has progressed much farther and left only a curving arm of the harder rock that still stretches gracefully out across the canyon.

This canyon, called by the Indians Nonnezoshieboko — Great Arch Canyon — is a gorge that takes its winding course from the slope of Navaho Mountain northwest into the Colorado River. Nonnezoshie spans this deep gulf from the cliff on one side to a bench on the other about six miles above the mouth of the canyon. In places below the arch, the cliffs that tower far above and form practically perpendicular walls on either side, draw so close together that there is barely room to pass through by wading the small stream in the narrow channel.

During the high waters in the spring or after a heavy shower

* *The Great Natural Bridges of Utah,* Bulletin of the University of Utah.

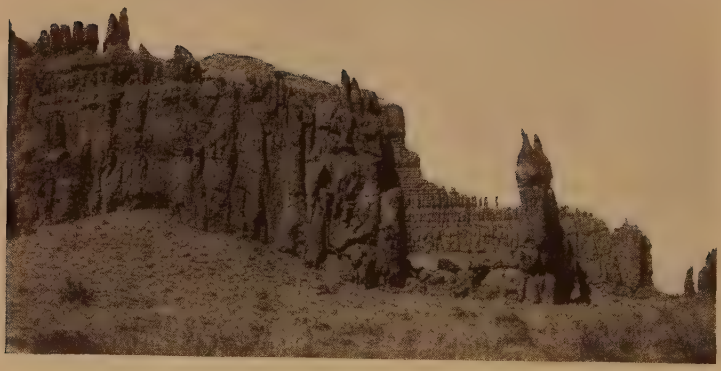


INDIAN PICTURE WRITING

NAVAHO RESERVATION

INDIAN PICTURE WRITING

SOUTHERN UTAH



ROCK FORMATIONS, SOUTHERN UTAH

ROCK FORMATIONS, NAVAHO RESERVATION

at any time of year it would be impossible to traverse this gorge. Good water is quite abundant in the immediate vicinity; but grass is scarce and the region so rough that it has been little frequented even by Indians. The setting of wild scenery and interesting physiographic features, however, make it one of the most attractive spots on the globe. On the northern slope of Navaho Mountain are two other smaller arches, each of which would be attractive in itself, were it not overshadowed by the great arch of Nonnezoshie.*

Professor Cummings thus explains the origin of these bridges:

Ages ago the great sandstone beds overlying this entire region must have been pushed upwards by the internal forces of the earth until in the places of their greatest elevation the various strata separated, mountains were formed, and large cracks opened up that extended in zigzag lines away through the slopes of this vast tableland. This process of elevation was undoubtedly a gradual one; and, as the waters of the mountains sought a lower level, they took their courses through those irregular crevices, searching for the ocean which was then not far away. Their rushing currents and surging eddies wore off the sharp corners, sought out the soft places in the yielding sandstone, dug out deep caverns and recesses in the cliffs, and left behind them a series of graceful curves and fantastic forms that amaze and delight the traveler at every turn. As the formation was pushed upward from time to time, these rushing currents and surging estuaries kept on with their work of cutting, smoothing, and filling until they produced the deep box canyons so prevalent in this section, which sometimes widen out into small valleys of rich alluvial deposit, and again narrow down to mere slits between huge masses of cliffs.

This elevation and opening of the formation often left a narrow section of the cliff extending out into the gorge for rods, around which the stream had to make its way as it rushed onward in its course. The constant surging of the waters

* *The Great Natural Bridges of Utah,* Bulletin of the University of Utah.

against this barrier revealed a soft place in the sandstone, where it gradually ate out a half dome-shaped cave. In a few instances as the water swirled around the other side of this barrier, they reached the corresponding soft place on the opposite side and ground out a similar half dome there. When, in the course of time, the backs of these two semi-circular caves came together, the waters found a shorter course through that opening, enlarged the archway and smoothed off and rounded into graceful curves the sides of its massive buttresses. Thus a bridge was formed and became a mighty span of enduring rock, whose foundations and graceful superstructure were laid by the ages.*

Still another wonderful bridge has been found in this remarkable land of enchantment, and Professor Cummings thus tells of its discovery and appearance:

In November, 1909, under the guidance of Dr. John Williams of Moab, we visited a natural bridge on the edge of Grand County that deserves to be classed with those of San Juan County among the great natural wonders of our continent. This is a graceful arch with a total elevation of sixty-two feet and a span of 122 feet long and forty-nine feet high. It stands beside the cliff on the western edge of Pritchett Valley; and has been fashioned under somewhat different conditions from those prevailing during the construction of the natural bridges already described. Here there has been no narrow zigzag canyon through which the waters surged in former times, but quite a large valley, some three miles long and from one-fourth to one-half a mile wide. On the sides of this irregular basin rise rugged cliffs that jut into the valley here and there in sharp points and rounded domes. The upper surfaces of these cliffs stretch back in bare undulating fields of sandstone, much eroded by wind and water. Caves have been hollowed out of these cliffs and various and numerous natural reservoirs are found scattered on the surface of these bare rocks where soft places have been found in the stone, or whirling eddies in

* *The Great Natural Bridges of Utah,* Bulletin of the University of Utah.

former ages have ground out cisterns. Some of these are mere shallow tanks, while others reach down twenty feet and more through the solid sandstone. Some are irregular and winding in their course, while others look as though they had been sunk by some Titanic drill when the gods were playing with the earth's crust. A few drain considerable areas of the cliff, and in time of storm many a rushing torrent loses itself in their depths. In a few instances such a reservoir has been formed directly behind a cave that was being hollowed out of the side of the cliff. As the walls of the cave gradually extended backward farther and farther into the cliff, the reservoir was sunk deeper and enlarged little by little until its bottom broke through into the back of the cave. Then the waters formerly gathered into the reservoir and held, surged through the cave and lost themselves in the valley below. Every downpour of rain and every driving wind carried the work a little farther until the former roof of the cave became an arch. When the reservoir held the waters until its depth about equalled that of the cave, then the gracefully curving arch of the cave became a real bridge as in the case of the fine arch already mentioned, which we have christened Pikyabo (Pee-kya-bo), the Ute name for Water Tank.*

One may visit these bridges from Bluff or Oljato, or may correspond with Wetherill and Colville, at Kayenta, Arizona, as suggested in the chapter on Betatakin and Kitsiel. To those who enjoy horseback riding and camping out the trip will be a revelation of delight, and far more than compensate for all the hardships the journey may entail.

* *The Great Natural Bridges of Utah,* Bulletin of the University of Utah.

CHAPTER XIX

THE GARDEN OF THE GODS AND MONUMENT PARK

LIKE the Virginia Natural Bridge, the Colorado Garden of the Gods has been so overshadowed by the later discoveries in the Land of the Standing Rocks in Arizona that it would scarce be deemed worthy a place in this volume were it not for its time-honored associations, and the fact that it will ever remain to hundreds of thousands of people the most remarkable area of erosion they have been able to witness. As Clifton Johnson says in his *American Highways and Byways of the Rocky Mountains:*

> Among the scenic attractions of the neighborhood, the most widely known, aside from Pike's Peak, is "The Garden of the Gods." This overspreads two or three miles of rough hills, and the growths for which the gods are responsible and which lend the Garden distinction, consist of a great variety of fantastic pillars and ridges of rock, mostly of red sandstone, but with an occasional gray upthrust of gypsum. Several of the pinnacled and grottoed ridges are of very impressive size, the highest over 300 feet; and in the lofty crannies numerous doves and swift-winged swallows have their nests. Down below, the prairie larks sing, and the robins hop about the ground, and you see an occasional magpie. But to me the greatest pleasure I enjoyed in the Garden was the view I had thence of the brotherhood of giant mountains clustering about the hoary Pike's Peak.

The Garden of the Gods is seventy-five miles from Denver, but only five from Colorado Springs. A fine automobile

Courtesy of U. S. Geological Survey

GATEWAY TO THE GARDEN OF THE GODS

PIKE'S PEAK IN THE DISTANCE

Courtesy of U. S. Geological Survey

CATHEDRAL SPIRES

GARDEN OF THE GODS

road connects these two cities, and there is also a good road from Colorado Springs on to the Garden of the Gods. Four miles out Glen Eyrie is reached, where, though it is a private estate, visitors are allowed to enter and see the sandstone monuments — some of which are generally supposed to be found within the Garden of the Gods. The two chief objects of interest are the Major Domo and Cathedral Rock. The former, a fantastically-carved piece of almost blood-red sandstone, one hundred and twenty feet high, with a rude knob or head, has a commanding or half ferocious presence, which is the cause of its title. It is only about ten feet in diameter at its base.

A mile further on the splendid Gateway to the Garden is reached. The pillars that compose it are 330 feet high and just wide enough apart to allow space for the carriage way; in the center of this is a red pillar twenty-five feet high, naturally dividing the roadway into an entrance and exit. Towering above us as we enter the Garden, the majestic and snow-crowned summit of Pike's Peak, over 14,000 feet high, fills the horizon, and is beautifully framed in a rich setting of red sandstone.

The Garden of the Gods is a tract of about 500 acres, thickly strewn with these fantastic and majestic natural monuments in red and white sandstone. The coloring of the rocks adds not a little to the effect, and to be properly seen the Garden should be visited in the morning or evening, when the shadows are long, and so add variety to their charm. Immediately after a rain the hues are deeper, and the red becomes so vivid that the truthful representations of the artist are taken for rude exaggerations.

Immediately the traveler finds himself within the gate

he is in an enchanted region, where objects unreal, supernatural, mighty and strange overwhelm the senses.

The road winds between every conceivable and inconceivable shape and size of rock, from pebbles up to gigantic boulders, from queer little grotesques, looking like seals, cats, or masks, to colossal forms, looking like elephants, like huge gargoyles, like giants, like sphinxes, some eighty feet high, all motionless and silent, with a strange look of having been just stopped and held back in the very climax of some supernatural catastrophe. The stillness, the absence of living things, the preponderance of bizarre shapes, the expression of arrested action, give the whole place, in spite of its glory of coloring, in spite of the grandeur of its vistas ending in snow-covered peaks only six miles away, in spite of its friendly and familiar cedars and pines, in spite of an occasional fragrance of clematis, or twitter of a sparrow — in spite of all these, there is a certain uncanniness of atmosphere, which is at first offensive. I doubt if anybody ever loved the Garden of the Gods at first sight. One must feel his way to its beauty and rareness, and must learn to appreciate it as one would a new language; even if a man has known Nature's tongue well, he will be a helpless foreigner here.*

Two of the mystic figures are much alike, and being anchored together at their base by the same rock stratum are called "The Twins." Their ogre-like heads remind one of Dickens' description of the dwarf Quilp, or of Victor Hugo's Hunchback of Notre Dame; ugly faces with rude protruding lips, their heads swathed in grey turbans. Seen in the moonlight, and especially if the stranger's eyes should happen to fall upon them unexpectedly, they would assuredly startle him by their weird and uncouth appearance.

*I regret I cannot name the author of this beautiful description, which I find among my clippings with no mention of its source.

More beautiful and impressive are the "Cathedral Spires," slender, slim, towering rocks that rise to heights varying from 100 to about 250 feet, the natural accompaniments of the majestic Cathedral Rock near by.

Somewhat similar in effect, but more massive and compact, is the "Tower of Babel." This approaches 300 feet in height, and its spires are not so pointed as those of the Cathedral, yet they are fantastic and quaint, and lend themselves with peculiar fitness to their name.

Another of the distinctive features of the rocks is that of the toadstools. These vary in size from tiny rocks up to six, ten, twelve and more feet in diameter. Some of them weigh many tons each. Others look like quaint Chinese hats, or a new style of umbrella. One of these is tall enough for a man to stand underneath, and a couple of children, caught here by a photographer on a rainy day, suggested that it was a land for the elves, where tiny lovers could find that seclusion and shelter which is dear to the hearts of all lovers, human and fairy. To many visitors the most interesting of all the rocks is found to be Balanced Rock, a massive cube as large as a dwelling-house, balanced on a pivot-like point at its base, as if a child's strength could upset it. Yet it is solid, fixed, immovable, and has so stood since it was first discovered by man.

At certain angles a fairly good human profile is to be seen upon the face of Balanced Rock — the eyes, nose, and mouth being rather well adjusted, though the chin is out of all proportion and the brow and head are "hilly and hollowy" enough to disconcert the most expert and experienced phrenologist.

All these fantastic and quaint forms have been carved

out of the sandstone by the action of rain, wind, storm, sand, frost, and atmospheric gases. As the gradual degradation and cutting out and down of the surrounding rocks took place these masses were slowly detached from the parent stratum, owing to their having been better protected than the rest of the rock, or because they were composed of more durable substances, more compacted together, perhaps, and thus better able to resist the encroachments of the gnawing teeth of Time.

Possibly the washing down of torrential waters from the nearby mountains may have helped considerably in their earliest emergence. Certain it is that water and wind have been principal agencies in carrying away the dust and debris of this Nature workshop. Millions of tons have been thus disposed of, some to help fill up the now level country beneath, others to aid the rivers in scouring out the wild and rugged gorges, ravines, and canyons that have given Colorado and the adjacent states some of the most stupendous scenery known to man.

Monument Park. The descriptions already given of the Garden of the Gods are in some measure appropriate to Monument Canyon (or Park, as it is more commonly known), although some striking differences may be noticed by the careful observer. Until travel was rendered easier to the Garden of the Gods Monument Park was the most popular resort in Colorado.

Imagine a great number of gigantic sugar loaves, quite irregular in shape, but all possessing the tapering form, varying in height from six to fifty feet, with each loaf capped by a flat stone of much darker color than the loaf, and having a shape not unlike a college student's mortar-

Courtesy of U. S. Geological Survey

IN MONUMENT PARK

FANTASTICALLY ERODED PILLARS

Courtesy of U. S. Geological Survey

IN MONUMENT PARK

board — such is Monument Park. The capping stones are all that remain of a later deposition of sandstone, which is somewhat harder and more durable than the whiter sandstone beneath. Consequently as the lower stratum has been eroded these caps have preserved the various columns from extinction, though the beating rain, wind, and snow have continued to gnaw them under the protecting shelter of the caps.

The monuments, for the most part, are ranged along the low hills on each side of the park, which is about a mile wide, but here and there one stands in the open plain. There are two or three small knolls apart from the hills; and on these several clusters of the columns are found presenting an appearance, at a slight distance, very like that of white marble columns so often found in cemeteries.

CHAPTER XX

THE OLD FRANCISCAN MISSIONS OF NEW MEXICO, ARIZONA, AND TEXAS

IN crossing the continent from the Atlantic to the Pacific every American, whose business does not compel speed, should proceed leisurely, stop off on the way and see some interesting place or locality. He should make up a list of these "journey breakers" and systematically read up on them, for if they are places of historic association or scientific interest — anything except mere scenery — the more knowledge possessed about them the more enjoyable will the visit prove itself to be.

To such a one I offer these old Missions as well worthy such study and careful visiting.

Spain, just after the discovery of America, was a great colonizing nation. Not even Rome or Greece, in their days of greatest power and conquest, were so successful in their planting of colonies in the heart of subjugated countries, and impressing their language, foods, and religion upon those whom they conquered, as were the Spaniards. Everything they undertook was carried out, not only with the lust of power, conquest, and desire for material gain, but the volatile and excitable Latin seemed to be at the flood in enthusiasm, energy, and domination. There are such times, undoubtedly, in races as there are in men, when they reach their prime, and are the most daring, exuberant, powerful,

and confident, and when their greatest accomplishments are achieved.

For the Spaniards this flood-time came when Cortés, Pizarro, Balboa, and Coronado took possession of the two Americas, and when the Philippines became tributary to their commerce. But unlike the other subjugating nations, Spain was fired with religious zeal to spread "the true faith" wherever her banners waved. Religion was in her blood, and this came up with the flood when Spain arose in her assumption of power. She, far more than England, was the earnest, devoted, loyal, and determined "defender of the faith." Life was of less importance than religion, care for the soul's welfare so far transcended care for the body that the Holy Inquisition was instituted. Better torture men's bodies with rack and thumb-screw, with crushing iron-boots and red-hot pincers; aye, better, even, burn them at the stake than let them suffer the pangs and tortures of everlasting perdition in the fierce flames of hell! One has but to read Dante to know how fervently this fierce and dark theology took possession of this impressionable people. And, believing as they did, they felt it with a vigor even more potent than that experienced by the Roundheads, the puritans of England. Hence they proselyted with unquenchable zeal, a zeal that counted not their own lives any more than the lives of those whose souls they sought so long as eternal salvation was gained.

With this spirit Jesuits, Franciscans, Dominicans, and other Catholic orders were inspired and imbued when the new fields of North and South America were opened up by the conquistadores. Here were opportunities to save precious souls by the hundreds of thousands. The dusky sons

and daughters of America were fruit for the gospel net, and happy, blessed, favored beyond compare would be those servants of God and Mother Church who caught the most and brought them safely within the fold.

Consequently never was such a rage for religious conquest known as swept over the New World at this time. With a spontaneous fervor that knew no halting, no reserve, that overcame all opposition, that overleaped all barriers and triumphed over all obstacles, these long-gowned friars carried the cross and administered the rites of the church in populous cities, rural communities, fierce deserts, deep canyons, dense forests, high mountains, lonely islands.

Under this impulse the Catholic Church was established all over the Americas, and, in addition, the Spanish language was imposed upon, or absorbed by, the people; so much so that, in spite of all the changes, the revolutions, the counter influences, they remain the most steady and permanent factors in their lives even to this present day.

Among other portions of the New World that felt their influences was Lower California. It was Christianized by the Jesuit Fathers Eusebius Kino, Juan Maria Salvatierra, and Juan Ugarte, who began their devoted and self-sacrificing labors as early as 1697, and in due time a chain of missions, twenty-three in number, reaching almost the entire length of the peninsula, was established, the ruins of which remain to this day.

Long prior to this time both Jesuits and Franciscans had reached out towards New Mexico. Oñate had made his reconquest of the country in 1595-1598, and in 1630 Padre Alonzo de Benavides reported to the King of Spain that there were about fifty friars at work in New Mexico, serv-

Photo by H. C. Tibbitts

SAN XAVIER MISSION

NEAR TUCSON, ARIZONA

Photo by author

SAN JOSE DE TUMACACORI MISSION

NEAR TUBAC, ARIZONA

ESPADA MISSION, NEAR SAN ANTONIO, TEXAS

SAN JOSE MISSION, NEAR SAN ANTONIO, TEXAS

ing over sixty thousand natives that had accepted Christianity; that these lived in ninety pueblos, grouped into twenty-five conventos or missions, and that each pueblo had its own church.

This was a wonderful record. As far as we know the first church built in this new province was that of San Gabriel, about 1598, and the fathers must have been indefatigable to produce, with little or no other labor than that of the Indians themselves, ninety churches in thirty years.

Some of these churches still remain, though only to be found in sad ruins. Most of them were completely destroyed in the great Pueblo Rebellion of 1680, when the Indians successfully arose and drove out the Spaniards from New Mexico. Fascinating stories are still told of those early days by the Indians, when they get together around the fire in winter time, and happy is that white man who can prevail upon them to let him enter the circle of interested listeners.

The natives did not long keep their independence, however. In 1692 Don Diego de Vargas began the work of the reconquest, and by 1700 the Spanish rule was again firmly fastened on New Mexico, never to be released until Mexico herself severed the bonds that bound her to the mother country, became a republic, and New Mexico one of its provinces. During those earlier years of reconquest many of the churches were built which are found today. Some of them occupy the sites hallowed by the blood of the martyrs who fought in defense of the earlier structures.

As related in separate chapters, there are churches at Zuni, Acoma, Santa Fe, etc., while at other places only ruins remain. At Awatobi — one of the Hopi towns — the natives showed kindness to the long-gowned Franciscans,

and the medicine men of the other Hopi villages were so enraged at this complaisance that they incited their followers to a complete destruction of Awatobi. This was accomplished, and several hundred Awatobians lost their lives — a story I have told in my book, *The Old Missions of Arizona, New Mexico and Texas.*

To know the history of these old missions is to be familiar with some of the most interesting epochs in American history, hence they are well worthy the study that will be necessary ere one may learn all that he should know.

While De Vargas was engaged in the reconquest of New Mexico events were shaping that were to lead to the establishment of a small chain of missions in Texas. The French were becoming very active in that direction, and the Spanish viceroy determined to forestall action which might lead to future claims on behalf of the French Crown. Hence, in 1715, the Duke of Linares, the viceroy before mentioned, sent troops of Franciscan friars into Texas, to establish settlements, Christianize the Indians, and, *incidentally,* prevent any Frenchman gaining foothold in the same land.

Soon a fort was established on the western bank of the San Pedro River, and it was called San Antonio de Valero. In 1718 a Franciscan mission was founded in the same settlement. This afterwards became the world-famed and historic Alamo, where Travis, Bowie, Crockett, Bonham, and about 170 other Texan heroes withstood the savage and determined attacks of Santa Anna, the Mexican, with his 6,000 troops, until every last man was slaughtered. But the victory cost Santa Anna dearly. He lost two thousand killed and over three hundred wounded.

The battlefield of San Jacinto was the answer of the

Photo by H. C. Tibbitts

THE ALAMO — ORIGINALLY A FRANCISCAN MISSION

FOUNDED IN 1718, SAN ANTONIO, TEXAS

DOORWAY, SAN JOSE MISSION

NEAR SAN ANTONIO, TEXAS

United States to Santa Anna's slaughter of the Texans, and the defeated Mexican was captured and should have been severely dealt with. Political influences, however, were brought to bear to save him, and he was ultimately released to cause more trouble in Mexico.

To return to the Texan missions. The foundation stone for a church was laid where the Cathedral of San Fernando, in the city of San Antonio, now stands, in 1738, and it occupied the site until the modern building was erected in 1873. Prior to the establishment of this church for the presidio of San Antonio de Bexar, other missions had been established on the river nearby — those of San Juan and San Francisco de la Espada in 1716, and that of San José in 1820. Ten years later that of La Concepcion Purissima de Acuña was started, so that now four missions, besides those of the Alamo and the Cathedral, are to be seen within six or eight miles of San Antonio.

These are all of easy access. Travelers going to California over the Sunset Route of the Southern Pacific can stop over at San Antonio, and in one day — though more should be taken — can visit all the six buildings.

On the other hand, the missions of New Mexico and Arizona require time. Except for that of Taos and of the other pueblos north of Santa Fe, which are reached from the New Mexican Branch of the Denver & Rio Grande Railway, all the others, except two, are best reached, and some are directly on the main transcontinental line of the Santa Fe. The advertising departments of all these railways will be glad to furnish such information as is at their disposal. The two exceptions referred to are the very interesting missions of San Xavier del Bac, near Tucson, and that of San

José de Tumacacori, near the Mexican border in Southern Arizona, and close to the line of the Southern Pacific of Mexico, which practically reaches from Tucson to Tepic.

San Xavier is a magnificent building, recently restored by the government, and easily reached by automobile from Tucson. That of Tumacacori was generally unknown and neglected until some dozen or more years ago, when I drove to it from Tucson, and found it in the hands of an Apache Indian, the main portion of the church used as a stable, and no care whatever being taken of it. I made a number of photographs of the interesting building, which showed, however, that something must speedily be done to prevent it from total collapse. It is now a national monument, and it is to be hoped will be cared for, and saved for the generations of the future.

CHAPTER XXI

THE YELLOWSTONE NATIONAL PARK

SPARKLING waterfalls, glacially fed fountains, hot bubbling mud-pots, a wildly dashing river, high-spouting geysers, a natural glass mountain, gorgeously glowing canyons, rare and majestic trees, lakes of weird and mysterious color, built-up terraces of grotesque architecture, rugged and picturesque mountains, tree petrifications, spasmodically ebullient hot springs, roaring steam vents, quieter fumaroles, together with wild animals tamed and made gentle by friendly intercourse with man — these go to make up the Yellowstone National Park.

When the geysers of the Yellowstone were discovered no one seems to know, yet the Yellowstone River undoubtedly was known to trappers and others before 1800, as David Thompson, connected with the British fur trade in the Northwest, gives, in his journal, the location of the stream and spells it Yellow Stone. Like so many others of the Wonders of the West no one was prepared to believe the stories of the Yellowstone when first told. The unbeliever and doubter have always abounded. He lives yet — in large numbers. John Colter, who had come out with Lewis and Clark on their memorable journey of western exploration, received permission to leave the expedition in 1806. He became a trapper and undoubtedly was the first white man to become familiar with the geysers, mud

springs, steam vents, and other wonders of the Yellowstone. Yet when he returned to civilization and told of what he had seen he was regarded as a modern Munchausen, and his stories were set down as lies or the fictions of a disordered imagination. Some thirty years later a noted western character, Jim Bridger, made considerable reputation as a wild and fantastic liar, simply because he told facts with which the Yellowstone had made him familiar.

As far as is known, the first reasonably accurate account of the Firehole Geyser Basin was written by an employee of the American Fur Company, Warren Angus Ferris. This was some time in the early forties. From that time on, popular knowledge increased with such rapidity that in 1869, 1870, and 1871 three parties went out to explore the region and thus forever set at rest all questions concerning it. The first party consisted of only three men, and was a purely private affair; the second was a sort of semi-official expedition, while the third was sent out under the scientific and military departments of the United States Government. The immediate result of the last expedition was that, in 1872, Congress set aside the park area, as bounded by Dr. F. V. Hayden, the eminent head of the Geological Survey of the Territories, as a National Park. It is a rectangular area, fifty-five by sixty-five miles in extent, and occupies the northwestern corner of the state of Wyoming and strips of the adjacent states — Idaho and Montana. The whole region is mountainous, snow-clad peaks looking down upon the geyser-punctured levels from elevations of ten to fourteen thousand feet. In traveling from Yellowstone Station, Montana, over the Park stage

Copyright by Northern Pacific Ry. Co.

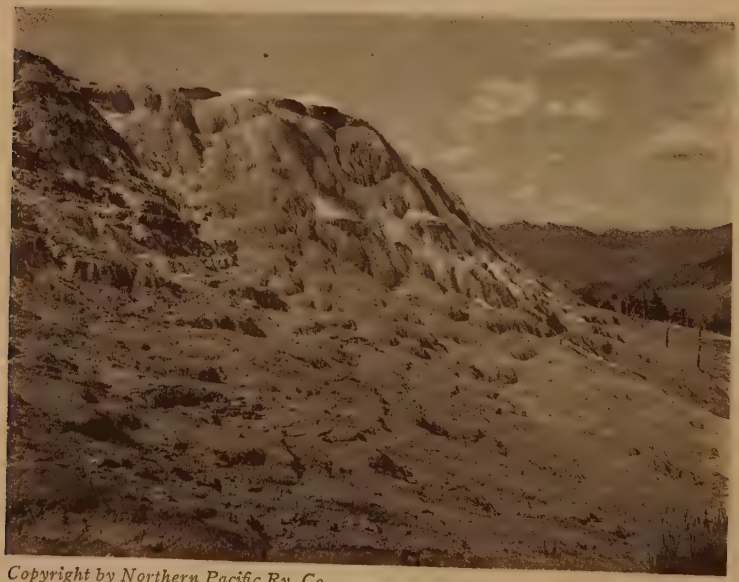
DOME GEYSER, YELLOWSTONE NATIONAL PARK

Courtesy of Northern Pacific Ry. Co.

PUNCH BOWL SPRING

Copyright by Haynes, St. Paul

PULPIT TERRACE



Copyright by Northern Pacific Ry. Co.

JUPITER TERRACE

road one ascends from 6,700 feet to 8,300 feet at the crossing of the Continental Divide.

The Park is under the control of the Department of the Interior, and all the roads have been built by Government engineers. Over one hundred and sixty miles have been so constructed, wide enough to allow coaches to pass at every point, and reinforced concrete, or steel bridges span the streams. The hotels are recently built and afford travelers every comfort and luxury.

The Park season opens June 16, and closes September 25, and July is a good month for a visit.

One may reach the Yellowstone from Gardiner, a station on the Northern Pacific, at the northern boundary, or Yellowstone, on the Union Pacific, on the western boundary. Both companies will furnish information as to their respective routes.

The regular tours of the Park naturally include the most striking features and scenic attractions. These are the geysers, the terraces, the hot springs, the bubbling mud volcanoes, the canyon of the Yellowstone River, with its Upper and Lower Falls, the obsidian cliff, etc.

Geysers are simply hot springs in a state of eruption. The chief of these are found in Lower, Middle, Upper, and Norris Basins. The three first basins are on the Firehole River, on the western side of the Park. There are literally thousands of objects of interest in these basins, and merely to enumerate them would be to weary the reader.

The Great Fountain Geyser, though not so near the Fountain Hotel as the *Fountain Geyser,* is one of the most remarkable in the Park. General Chittenden says of it:

Its formation is quite unlike that of any other. At first

sight the visitor is tempted to believe that someone has here placed a vast pedestal upon which to erect a monument. It is a broad, circular table about two feet high, composed entirely of hard siliceous deposit. In its surface are numerous pools moulded and ornamented in a manner quite unapproachable, at least on so large a scale, in any other part of the Park. In the center of the pedestal where the monument ought to stand, is a large irregular pool of great depth, full of hot water, forming, to all appearances, a lovely quiescent spring. At times of eruption the contents of this spring are hurled bodily upward to a height sometimes reaching 100 feet. The torrent of water which follows the prodigious down-pouring upon the face of the pedestal flows away in all directions over the white geyserite plain.*

In this same basin, too, is the *Firehole,* from which the river gets its name. Many people do not go to see it, as it is not on the stage-line and, being off the beaten track, is a little hard to find. Then, too, it is uncertain, owing to the fact that when the wind agitates its surface its chief attraction is not made manifest.

It is a large hot spring. Apparently arising from its clear and pellucid depths is a light-colored flame, which is extinguished in the water just before it reaches the surface. Flickering back and forth like the flame of a torch in a gusty wind, it sometimes possesses a distinctly ruddy tinge. Under proper conditions the illusion is perfect, and the onlooker is positive he is seeing flames *under the water.* It is caused by jets of superheated steam which emerge through a fissure in the rock. These divide the water just as bubbles do on a smaller scale, and the reflection from the surface makes the flame-like appearance, which is intensified by the black background of the bottom and sides of the pool.

* *The Yellowstone National Park,* By Hiram M. Chittenden, Stewart & Kidd Co., Cincinnati, 1915.

Copyright by Northern Pacific Ry. Co.

TOWER FALLS

Copyright by Northern Pacific Ry. Co.

OLD FAITHFUL GEYSER

Prismatic Lake is exquisitely beautiful. It rests on the summit of a self-built mound, gently sloping in all directions. The overflow from the spring runs over these slopes in tiny rivulets, the channels of which interlace each other, giving the Lake the appearance of a large spider, 250 to 300 feet in size, with its radiating web. Steam hovers over it almost incessantly which generally bears a crimson tinge, but when the wind removes this steam covering, the water is found to possess a prismatic play of colors that is alluring and enchanting.

Perhaps the best known of all the geysers is *Old Faithful* in the Upper Basin. While the Giant, Giantess, Grand, Splendid, and Excelsior have more powerful eruptions, the Bee Hive is more artistic in its appearance, and the Great Fountain has a more wonderful formation, Old Faithful partakes of all these characteristics with the invaluable addition of uniform periodicity of action. Every sixty-five minutes it may be relied upon.

Night and day, winter and summer, seen or unseen, this tremendous fountain has been playing for untold ages. Only in thousands of years can its lifetime be reckoned; for the visible work it has wrought, and its present infinitely slow rate of building up its cone, fairly appall the inquirer who seeks to learn its real age.*

Let us stand and see it in operation. It is in the center of an oblong mound, 145 by 215 feet at the base, twenty by fifty-four feet at the summit, and about twelve feet high. The tube, which probably started through a rock fissure, is two by six feet, inside measurement. Lieutenant Doane, who first described it, grew eloquent over the rare and

* *The Yellowstone National Park.*

exquisite quality of the natural adornment of the crater. He says:

> Close around the opening are built up walls, eight feet in height, of spherical nodules, from six inches to three feet in diameter. These stony spheres, in turn, are covered with minute globules of stalagmite, incrusted with a thin glazing of silica. The rock, at a distance, appears the color of ashes of roses, but near at hand shows a metallic gray, with pink and yellow margins of the utmost delicacy. Being constantly wet, the colors are brilliant beyond description.*

The rest of the mound is equally beautiful, the deposits apparently as delicate as the down on a butterfly's wing, both in texture and coloring, yet are firm and solid beneath the tread.

Now a few growls from the throat of the geyser bids us be ready. Without further warning a graceful column of water six feet in diameter rises to a height of 150 feet, with no other noise than that made by an ordinary hose, somewhat intensified. For several minutes it leaps upward with recurrent intervals, the great mass of water falling directly back into the basin and flowing down the mound's slopes in large quantities. The breeze sometimes seizes the stream and carries it away, unfolding it like an enormous prismatic flag from its watery standard. Spray and steam glisten and sparkle in the sunbeams like jeweled lace fit only for fairies to wear. In the glow of the sunrise or sunset it flashes forth fire like the ruby, and scintillates in radiant splendor as from a hundred thousand opals. In the moonlight it seems like some solemn ceremonial connected with a bridal, the floating veils becoming almost unearthly in their snowy whiteness.

*Quoted in *Wonders of the Yellowstone*, by James Richardson. Charles Scribner's Sons, 1886.

Not far away is the *Giantess,* a fountain geyser of infrequent and irregular operation, and happy is that visitor who happens to be present when it deigns to perform. Mr. N. P. Langford, the first superintendent of the Park, thus describes the first eruption known to have been seen by white men:

No water could be discovered, but we could distinctly hear it gurgling and boiling at a great distance below. Suddenly it began to rise, boiling and spluttering, and sending out huge masses of steam, causing a general stampede of our company, driving us some distance from our point of observation. When within about forty feet of the surface it became stationary, and we returned to look down upon it. It was foaming and surging at a terrible rate, occasionally emitting small jets of hot water nearly to the mouth of the orifice. All at once it seemed seized with a fearful spasm, and rose with incredible rapidity, hardly affording us time to flee to a safe distance, when it burst from the orifice with terrific momentum, rising in a column the full size of this immense aperture (eighteen feet) to the height of sixty feet; and through and out of the apex of this vast aqueous mass, five or six lesser jets or round columns of water, varying in size from six to fifteen inches in diameter, were projected to the marvelous height of two hundred and fifty feet. These lesser jets, so much higher than the main column, and shooting through it, doubtless proceed from auxiliary pipes leading into the principal orifice near the bottom, where the explosive force is greater. . . . This grand eruption continued for twenty minutes, and was the most magnificent sight we ever witnessed. We were standing on the side of the geyser nearest the sun, the gleams of which filled the sparkling column of water and spray with myriads of rainbows, whose arches were constantly changing, dipping and fluttering hither and thither and disappearing only to be succeeded by others, again and again, amid the aqueous column, while the minute globules into which the spent jets were diffused when falling sparkled like a shower of diamonds, and around every shadow which the denser clouds of vapor, interrupting the sun's rays, cast upon

the column, could be seen a luminous circle radiant with all the colors of the prism, and resembling the halo of glory represented in paintings as encircling the head of Divinity. All that we had previously witnessed seemed tame in comparison with the perfect grandeur and beauty of this display.*

There are many mud volcanoes in the park, the chief of which Mr. Langford thus describes:

About two hundred yards from a cave which ejected hot water with great force is a most singular phenomenon, which we called *Muddy Geyser*. It presents a funnel-shaped orifice in the midst of a basin one hundred and fifty feet in diameter, with sloping sides of clay and sand. The crater or orifice at the surface is thirty by fifty feet in diameter. It tapers quite uniformly to the depth of about thirty feet, where the water may be seen, when the geyser is in repose, presenting a surface of six or seven feet in breadth. The flow of this geyser is regular every six hours. The water rises gradually, commencing to boil when about half way to the surface, and occasionally breaking forth in great violence. When the crater is filled, it is expelled from it in a splashing, scattered mass ten or fifteen feet in thickness to the height of forty feet.†

Another mud geyser he thus describes:

While returning by a new route to our camp, dull, thundering sounds, which General Washburn likened to frequent discharges of a distant mortar, broke upon our ears. We followed their direction, and found them to proceed from a mud volcano, which occupied the slope of a small hill, embowered in a grove of pines. Dense volumes of steam shot into the air with each report, through a crater thirty feet in diameter. The reports, though irregular, occurred as often as every five seconds, and could be distinctly heard half a mile. Each alternate report shook the ground a distance of two hundred yards or more, and the massive jets of vapor which accompanied them burst forth like the smoke of burning gunpowder.

* *Wonders of the Yellowstone.*
† *Ibid.*

Courtesy of Northern Pacific Ry. Co.

GROTTO GEYSER

Courtesy of Northern Pacific Ry. Co.

CLEOPATRA TERRACE

Copyright by Northern Pacific Ry. Co.

SILVER CORD CASCADES

It was impossible to stand on the edge of that side of the crater opposite the wind, and one of our party was rewarded for his temerity in venturing too near the rim, by being thrown by the force of the volume of steam violently down the outer side of the crater.*

Dr. Hayden was much impressed by this volcano. He says:

It does not boil with an impulse like most of the mud springs, but with a constant roar which shakes the ground for a considerable distance, and may be heard for half a mile. A dense column of steam is ever rising, filling the crater, but now and then a passing breeze will remove it for a moment, revealing one of the most terrific sights one could well imagine. The contents are composed of thin mud in a continual state of the most violent agitation, like an immense caldron of mush submitted to a constant, uniform, but most intense heat.†

Of the canyon of the Yellowstone River and its falls a brief description must suffice. Not so vast and awe-inspiring as its great counterpart of the Colorado River, many deem its coloring more vivid, varied, and wonderful. It is justly entitled to rank among the natural wonders of the world, for few scenes so completely unite as it does the two requisites of majesty and beauty.

The canyon in its largest section measures 2,000 feet at the top, 200 feet at the bottom, and is 1,200 feet deep. General Chittenden says of it:

It is volcanic rock through which the river has cut its way that gives the Grand Canyon of the Yellowstone its distinctive character. It is preeminently a canyon of color. The hue has no existence which cannot be found there. "Hung up and let down and spread abroad are all the colors of the land, sea, and sky," says Talmage, without hyperbole. From the dark, for-

* *Wonders of the Yellowstone.*
† *Ibid.*

est-bordered brink the sides descend for the most part with the natural slope of the loose rock, but frequently broken by vertical ledges and isolated pinnacles which give a castellated and romantic air to the whole. Eagles build their nests here and soar midway through the vast chasm far below the beholder.*

Half a mile above the Upper Falls the Yellowstone gives no intimation of its approaching career of wildness and grandeur. It rolls peacefully between low verdant banks and over pebbly beaches or spaces of quicksand, with beautiful curves and a majestic motion. Mr. Langford says of the Upper Falls:

It is entirely unlike the Lower Fall. For some distance above it the river breaks into frightful rapids. The stream is narrowed between the rocks as it approaches the brink and bounds with impatient struggles for release, leaping through the stony jaws in a sheet of snow-white foam over a precipice nearly perpendicular, 140 feet high. Midway in its descent the entire volume of water is carried by the sloping surface of an intervening ledge twelve or fifteen feet beyond the vertical base of the precipice, gaining therefrom a novel and interesting feature. The churning of the water upon the rocks reduces it to a mass of foam and spray, through which all the colors of the solar spectrum are reproduced in astonishing profusion. What this cataract lacks in sublimity is more than compensated by picturesqueness. The rocks which overshadow it do not veil it from the open light. It is up amid the pine foliage which crowns the adjacent hills, the grand feature of a landscape unrivalled for beauties of vegetation as well as of rock and glen.†

Of the Lower Fall, General Chittenden has this to say:

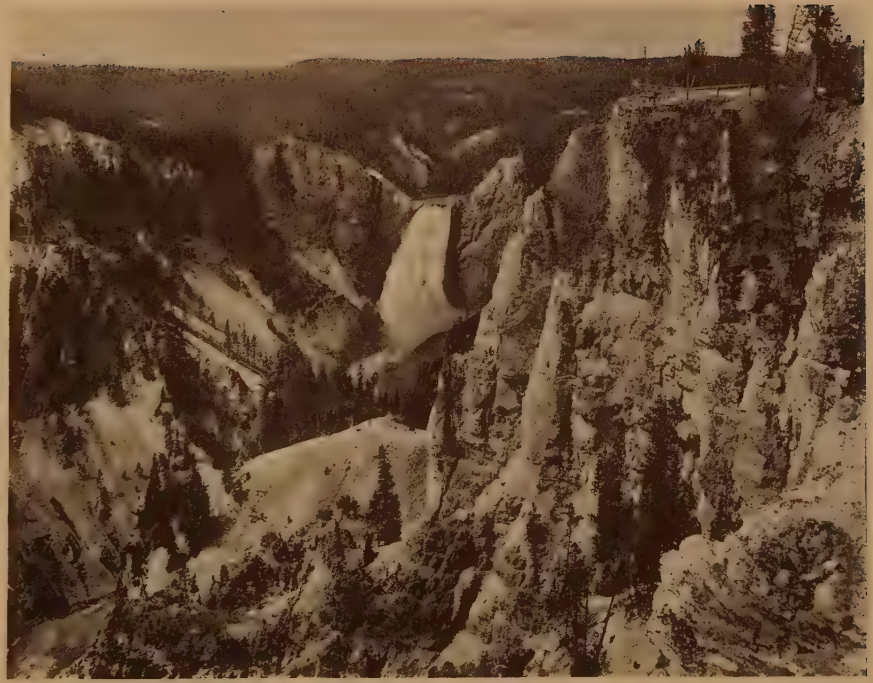
This must be placed in the front rank of similar phenomena. It carries not one-twentieth the water of Niagara, but Niagara

* *The Yellowstone National Park.* By H. M. Chittenden, Stewart & Kidd Co., Cincinnati.

† *Wonders of the Yellowstone.*

Copyright by Haynes, St. Paul

CANYON AT TOWER FALLS, SHOWING NEEDLES



Copyright by Northern Pacific Ry. Co.

GRAND CANYON AND GREAT FALL OF THE YELLOWSTONE

is in no single part so beautiful. Its height is 310 feet. Its descent is very regular, slightly broken by a point of rock on the right bank. A third of the fall is hidden behind the vast cloud of spray which forever conceals the mad play of the waters beneath; but the mighty turmoil of that recess in the rocks may be judged from the deep-toned thunder which rises in ceaseless cadence and jars the air for miles around.*

To many visitors the stream far down in the bottom of the canyon is the crowning beauty of the whole scene. It is so distant that its rapid course is diminished to the gentlest movement, and its continuous roar to the subdued murmur of the pine forests. Its winding, hide-and-seek course, its dark surface where the shadows cover it, its bright limpid green under the play of the sunlight, its ever-recurring foam-white patches, and particularly its display of life where all around is silent and motionless, make it a thing of entrancing beauty to all who behold it.

Here, then, in imperfect outline is the Yellowstone National Park presented. Alluring, mysterious, enchanting in the peculiar rarity of its attractions, combining a wonderful variety with which to play upon the varied emotions of mankind, embowered in majestic ranges of mountains that in themselves demand homage by their surpassing grandeur, every traveled American must see and know the Yellowstone before he can regard his ordinary education as complete. A tour, with General Chittenden's excellent manual in hand (from which quotations have been made), will afford immense satisfaction and lasting pleasure.

* *The Yellowstone National Park.*

CHAPTER XXII

ON THE ROOF OF THE CONTINENT—THE GLACIER NATIONAL PARK, MONTANA

EIGHTY glaciers, some of them five square miles in area, over 250 lakes, surrounded by steep and beautifully wooded mountains or precipitous rock walls, and comprising 915,000 acres in all, this wonderful Montana park is worthy its name, and was set apart for the public pleasure none too soon. On the north it touches Canada, on the south is bounded by the Great Northern Railway, on the east by the Blackfeet Indian Reservation, and on the west by the Flathead River. Not its least charm is its majestic mountain peaks, Mount Cleveland, 10,438 feet; Mt. Jackson, 10,123 feet, and a score or more of others ranging in height from 8,000 to 10,000 feet above sea-level. It is a veritable Continental Divide, for waters start from these crests that flow westward into the Pacific, northward into Hudson's Bay, and south to the Gulf of Mexico.

While one cannot automobile directly into the nose of a glacier here, as is possible in the Mt. Rainier National Park, he can have far more extent of automobile riding in the interior of the park itself. For a fine road has been constructed reaching from Glacier Park Station, on the Great Northern Railway, over fifty miles northward, to the McDermott Lake. Standing with open arms of welcome at each end of this road are magnificent hotels, Glacier Park Hotel,

and Many-Glacier Hotel. Both are log hotels, in perfect keeping with their surroundings, and each has accommodations for over 400 guests. They are owned and operated by the Great Northern Railway. It would be a great error, however, to conceive of these hotels as mere mountain makeshifts. When it is known that each of these hotels cost a half a million dollars, and that the forest lobby of the Glacier Park Hotel is already famous as one of the most striking hotel lobbies in the world, one will realize that provision is made for a large and first-class clientele, who need and demand the best for their comfort and luxury.

Nor should it be thought that the automobile road above referred to is the only road in the Park. There are others, though they are rough mountain roads, or horseback trails. Another great advantage of this Park is that permanent camps are established within an easy walking day's distance of each other, so that those who want to see the Park's wonders in their fullness, and yet must be economical, can do so. The camps are from eight to sixteen miles apart, guides are not necessary, and one's expenses, if he provide his own outfit, need not be over one dollar per day, though if he sleep at the chalet camps, the cost will be from $3.25 to $3.50 per day.

Perhaps it is well that I should enlarge somewhat upon this popular feature of touring Glacier National Park. From reference to the folders of the Great Northern Railway (which may be had free on application to the Advertising Department, St. Paul, Minn.), it will be seen that it plans, not only automobile, wagon, and horseback trips for its patrons, but makes especial mention of walking and camping tours.

There are regular automobile stages between Glacier Park Station and Many-Glacier Hotel, and Two Medicine Camp,

and a stage service between Belton Station and the foot of Lake McDonald. This latter connects with launches for all points on the lake. Regular launches are also operated on Upper St. Mary Lake.

Sportsmen contend that this Park is the greatest game preserve on the American continent. An elk was killed two years ago whose horns had a spread of fifty-six inches, and five years ago Chief White Calf, of the Piegan Indians, killed two grizzly bears, their skins being larger than any from the biggest buffalo of which hunters have any record. Frank Higgins, the pioneer mountain hunter of the region, says he believes it is the greatest elk range on the continent. Here are also to be found mountain goats, big-horn sheep, moose, lions, grizzly, brown and black bear, deer, antelope, and an almost endless variety of the smaller game. In 1912 hundreds of deer appeared in the valleys along the western slope of the Continental Divide, just outside the Park breeding grounds, evidently lured there by the extra good feed, and having been trained to feel secure owing to the game preservation so rigidly observed in the Park's domain.

Trout fishermen also say that it is an incomparable region for their sport, equal to the Tahoe country, which is like saying it is well-nigh perfect.

The varieties are the small flat trout, the cutthroat, Dolly Varden and rainbow trout, varying in size from half a pound to the large Bull and Mackinac trout weighing up to twenty pounds. Of these the gamest fighter is the cutthroat, so called from the two streaks of red running parallel beneath its gills, which inhabits most of the streams and many of the lakes. Bull trout are found mostly in St. Mary Lake. They can be depended upon to put up a hard fight.

Copyright, Kiser Photo Co.

CLIMBING BLACKFEET GLACIER

GLACIER NATIONAL PARK, MONTANA

Copyright, Kiser Photo Co.

MOUNT JACKSON

GLACIER NATIONAL PARK, MONTANA

All persons desiring to fish the waters of Glacier National Park must obtain fishing license under the laws of the State of Montana. Fees for these licenses are: Residents of state $1.00, non-residents $2.00.

A very interesting and finely illustrated forty page booklet entitled "Where the Fighting Trout Leap High," telling of these fish, will be sent on application to the Great Northern official before referred to.

Those, too, who enjoy meeting Indians will here find abundance of them. Less corrupted by contact with whites than many of the more southerly tribes, the Piegans or Blackfeet have preserved their original independence and many of their aboriginal customs. Yet, since the advent of the automobile, they have hastened to clasp hands with the white tourists, greeting them with smiles and friendliness, welcoming them to their campfires, and even acting as guides. One of the great pleasures of such a trip as one may take in the Glacier National Park is to engage an intelligent Indian, let him guide you over glaciers, and mountain trails, escort you to secret places with which he is familiar in forest and canyon, show you where the best game is to be found, and where the finest trout lurk, and then, particularly, at night time, around the campfire, when your blankets have been unrolled and a rock is heating to keep your feet warm during the night, get him to tell you some of the Stories of the Old. There is not a lake, a glacier, a peak, even a prominent cliff or rocky feature of any kind, that does not have a legend connected with it, and these legends are often full of vivid and brilliant imagination. For instance, Katherine Louise Smith thus tells "Why Two Medicine Lake received its name."

As the story goes, there was a famine in the land. Even the buffalo had left, and there was nothing to eat but berries. The Blackfeet are plains Indians, and this loss of game meant to them virtual starvation. So the wise men of the tribe came up into the mountains and built two medicine lodges on the shores of this lake to worship the Great Spirit and pray that they might be relieved from the famine. When the Great Spirit heard them, he directed that some of their oldest men should go to Chief Mountain, where the Wind God held sway. The old men were afraid to approach the Wind God, and so the Great Spirit directed that the medicine men send their youngest and bravest warriors. These young men, when they reached Chief Mountain and saw the Wind God, were also afraid; but they drew nearer and nearer to him and finally dared to touch the skins he was wearing. They made their prayer, and he listened. Stretching one wing far over the plains, he told them in this way to go back there and they would find the buffalo. The warriors descended to the valley and brought the good news to their people. They found that the buffalo had already come back and that their famine was broken.*

The largest and most wonderful glacier in the Park is the Blackfoot Glacier, one of the largest, if not the largest, in the United States. It is three square miles in extent and is at an altitude of 7,000 feet. It is regarded as especially dangerous near the upper cascades, and no one is allowed to go upon it without competent guides.

On the other hand, Dr. William T. Hornaday, in his interesting little monograph, "Glacier National Park," says of the Sperry Glacier:

It is so near to Lake McDonald that a child of sixteen can attain it; but the fat man or the timid lady surely needs a rope to give confidence up a certain thirty feet of rock wall that cannot be ignored.

The Sperry is not by any means a big glacier; but it is big

*"Glacier National Park," *The Outlook*, Oct. 28, 1914.

Copyright, Kiser Photo Co.

WATERFALL — TWO THOUSAND FEET

GLACIER NATIONAL PARK, MONTANA

Copyright, Kiser Photo Co.

BLACKFEET GLACIER

GLACIER NATIONAL PARK

ICEBERG LAKE, GLACIER NATIONAL PARK

LAKE McDERMOTT, AN ARTIST'S PARADISE

enough to have given thrills to a great many appreciative tourists out for their first offense.

I know of no one spot in the new wonderland park where the tourist can get so much for so little as in the Sperry Glacier region. On that short jaunt from Lake McDonald you can get a mighty good series of samples of Glacier Park. There is the lovely green timber, the Sperry Basin, the view of Gunsight region, Lake Ellen Wilson, the glacier itself, and Avalanche Basin, into which the glacier's water falls. You can climb down directly from the glacier to Avalanche Basin; but it is a dangerous and difficult task, and good guides advise against it. It is best to take horses at the Glacier Hotel and ride to the basin; but on a dripping day you want all the waterproofs there are in the whole world.*

And of the lakes he says:

Take them all in all, coming or going, I think the lakes furnish the greatest charm of Glacier Park. The mountains and peaks are the monuments of the ages, the glaciers are the natural curiosities, the woods are the green textile embroidery; but the lakes are the jewels that have been set by the hand of God himself. Show me the man who is insensible to their charms, and I will show you a Hopeless Case.

Seen close at hand, the big ones, like McDonald, are deeply, darkly, beautifully blue, bordered by limpid green. Seen from aloft, the small lakes, Gunsight and Ellen Wilson, embosomed in the high ranges, are like polished emeralds — clear, green, and surpassingly lovely. A lake like Ellen Wilson, as seen from Lincoln Peak on a still and clear afternoon, is enough to make a lump rise in the throat of a marble Buddha. There are a few things in scenery that cannot be described, and to my mind, a high mountain lakelet is one. The clearness of the water along the rocky shores appeals to me. In the Corcoran Art Gallery you can find this charming feature beautifully depicted in Bierstadt's painting of Mount Corcoran.

The lakes of Glacier Park reveal two distinct types. The first is the large, deep, sea-going lake, like McDonald, from 250 to 300 feet deep, occupying a large basin, and affording much

* *The Mentor,* June 1, 1914, the Mentor Association, N. Y.

entertainment. The other is the jewel type, like Lakes Ellen Wilson and Gunsight, too small to navigate and too large to be carried away, and mounted in gold, as jewelry.*

Miss Katharine L. Smith has this to say of the lakes:

A few of these lakes are circular in form, but the typical lake of this region is long and narrow. The settings of almost all are sublime. Giant pines fringe their edges, and bleak and bare mountains rise precipitously from their shores. One lake, known as Iceberg Lake, which can be reached from Many-Glacier Camp, is the only lake of its kind to be found on the continent of North America. At one end is a small glacier, and during the warm days of summer this mass of ice moves out over the edge of the solid wall that holds it, and great chunks as big as the Flatiron Building in New York City go plunging down into the water. The elevation at this point is so high that the lake never becomes warm enough to melt the ice entirely. There are always several huge icebergs floating on its surface. Iceberg Lake was thought by the Indians to be the home of lost souls and troubled spirits. Avalanche Lake, in Avalanche Basin, at the head of Lake McDonald, is another beauty that is well worth a day's jaunt to reach. It is the favorite with persons unaccustomed to horseback, for the trail is an easy one through pine forests until, as the rider suddenly emerges at what seems a hole in the Rockies, the lake bursts upon the traveler's vision, a gem often seen through a halo of purple mist. This lake is two miles long, with a border of green. Its chief charms are four waterfalls tumbling down from the surrounding hill. In the distance these great falls seem like ribbons flung from the trap, to end in milky foam below.†

In addition to material issued by the Great Northern Railway, the Superintendent of National Parks, Monadnock Building, San Francisco, Calif., will send to applicants the government's pamphlet on Glacier National Park. This is a compendium of information which all should obtain before making the trip.

* *The Mentor,* June 1, 1914. † *The Outlook,* vol. 108, p. 483, 1914.

CHAPTER XXIII

RAINIER NATIONAL PARK

TIME was when even the scientists said there were no glaciers within the boundaries of the United States. Then John Muir, discovered true glaciers in the Sierras, after months of careful and scientific investigation, and soon it was known that there were many "snow banks" in our mountains, all of which possessed the characteristics of true glaciers.

Around Mt. Rainier — alas! that the glorious Tahoma, "the Mountain that was God," as the Indians term it, should be known by the name of an English naval officer, instead of by its own perfect name — there are many glaciers, and in conformity with the growing custom of setting aside as National Parks those scenic attractions that, forever, should belong to the people, the Mount Rainier National Park was so set apart in March, 1899. It comprises 207,360 acres and includes the whole mountain and its wonderful radiating system of glaciers, one of the largest, belonging to a single peak, in the known world.

To visit glaciers in an automobile seems to be an impossibility, yet, nowadays, it is the impossible that people demand. Therefore Nature even seems to yield, and at Rainier one rides in an automobile over a well-constructed government road right to the very nose, or "snout" of the Nisqually Glacier. Rainier park, with its glaciers, must not

be confused with Glacier National Park, in Montana, to which another chapter is devoted.

Rainier National Park is a nearly perfect square, each side of which is eighteen miles long, and it is completely surrounded by the Rainier National Forest. It may be reached either by rail or automobile from Tacoma or Seattle, the rail route, however, terminating at Ashford, thirteen miles from Longmire Springs. This gap is covered by the auto stage line. This is the entrance to the southern portion of the park. On the north access is gained by the Northern Pacific to Fairfax, where there are no hotels, and camping out is the only method of travel. To those who enjoy rough and ready western life their trip to the summit of the mountain from this entrance is most enjoyable.

Even those who wish to travel no further than the automobile will take them will still find much pleasure in a visit to the Nisqually Glacier. The ride is over an excellent road, the first twenty-eight miles of which, from Tacoma, is at the base of huge timbered bluffs, which rise sheer from the prairie level, or through timbered spaces where the trees are mirrored in the crystal waters of many lakes. When the top of King Hill is reached, overlooking Ohop Valley, a glorious view is to be obtained on a clear day. The majestic mountain dome, clad in its robe of pristine purity, dominates the landscape, with its assemblage of sister peaks doing it homage. By skilful engineering the road strikes Nisqually Canyon at its very tip, and here one gazes down into the 1,000 feet deep abyss at the bottom of which the Nisqually River winds its roaring way to the sea.

In this canyon we see the Tacoma electric plant, con-

Photo by Curtis and Miller

ENTRANCE TO RAINIER NATIONAL PARK

Photo by Curtis and Miller

"SNOUT" OF NISQUALLY GLACIER

RAINIER NATIONAL PARK

structed at an expense of $2,500,000. For quite a distance the road hovers close over the canyon's depths, then, suddenly, it plunges into the great fir forest, and an entirely new series of effects are produced. But the ascent is ever gradually maintained until the log gateway of the Park is reached. Still on and on through dense timber which grows taller and taller as we proceed. These are fir and hemlock, cedar and tamarack, spruce and pine, maple and cottonwood, alder and sycamore, until even the dust of the road takes on a greenish tinge. At Longmire Springs there are two hotels, one for the luxurious, the other for those who do not mind the simplicities and economies.

The mountain road really begins here. For five and one-half miles it switches and crooks, turns and twists, making all kinds of curving and doubling figures, but ascending constantly, and revealing pictures of sublimity, glory, and enchantment until, at last, on a bridge, we stand and contemplate the great wall of ice of the Nisqually Glacier, less than a thousand feet away, and our automobile journey is at an end. From this point we go higher by wagon, on horseback, on foot, amid real Alpine glories. Trails have been constructed in every direction to make the glaciers and other delights of the park more easily accessible. There are the Nisqually, Cowlitz, Ingraham, Ohanapecosh, Frying-pan, Emmons, Winthrop, Carbon, Russell, the two Mowich, Edmunds, Puyallup, Tahoma, Pyramid, Kautz, Van Trump, and Wilson Glaciers. Here one may revel for days in the marvelous scenery of glaciers — crevasses, ice-bridges, glacial fountains, hidden rivers, and the play of sunbeam and moonbeam upon, in, and through the crystal ice.

But the chief delight of the trip to the adventurous is the ascent of the mountain. This is generally made from Reese's Camp in Paradise Valley, 5,500 feet elevation, where guides and proper equipment may be obtained. From this point the mountain seems built of snow and ice, as though it were a vast pyramid broken through by jagged ridges of black rock. A field glass reveals that these blocks of basalt and granite are beetling crags, towering pinnacles and dizzy precipices, but there being nothing to compare them with, their grandeur is not readily perceptible.

From Puget Sound, Mount Rainier is a thing of inestimable beauty, calm, serene, beautiful, a white-robed spirit. There he is, close to us, towering over us, a thing of awesome majesty. * * * We cannot watch him long and preserve our buoyant feeling. He calls, but at the same moment he overwhelms.

Below us is Paradise Valley, the valley of flowers we trod a little while before — the crimson and the orange, red, blue, violet, and white swaying gently, with here and there a clump of firs. Across from us a great stone ridge, dark, perpendicular, and foaming from its dizzy heights, are two waterfalls that become rivers in the valley below. Then we follow the azure sky line and the Tatoosh Range looms rugged, too rugged for the snow to cling, save in patches. As far as the eye can reach the bold pinnacles stand out, and we realize that beyond these stand ridge after ridge.*

Having passed the scrutiny of the guide, a start is made for the summit. The Beehive is passed, the Cowlitz Glacier crossed, Camp Muir is reached, and then comes Gibraltar. Here let Mr. McCully tell the story of his trip on to the last triumphant view from the summit:

Ahead is Gibraltar, beetling, stern, forbidding, the cause of our early start, for at midday he stands impassable. This one great wall of rock has sent down avalanche upon avalanche.

*A. Woodruff McCully, in *Overland Monthly*, June, 1910.

Photo by Curtis and Miller

NEAR VIEW OF NISQUALLY'S "SNOUT"

RAINIER NATIONAL PARK

Photo by Curtis and Miller

MIRROR LAKE, RAINIER NATIONAL PARK

Barely a day goes by that a tumbling sweep of rock does not break from his face. By noon the sun's rays on the melting snows have served to dislodge stones enough to start the avalanches. Our guide watches the sky carefully, the face of the overhanging cliff, the narrow way ahead, and then looks us over anxiously. His word is law here, and we tremble, for not one of us would stay behind.

The wind almost sweeps us from our feet. We hardly dare to hug the wall above for fear of starting some loose rock, and below us falls another sheer precipice. Yet even here the way seems natural, and our ropes almost a nuisance. Gibraltar once rounded, we pause for breath. Our battle is almost won. The wind bends us; we cannot stand upright, but we are ready to push on. Over snow and ice, rounding a bare pinnacle, climbing, slipping, catching a breath, we stagger on, nearer, nearer, until — we are there! Columbia Crest!

The gale blows us. It is twenty degrees below zero. The steaming rocks of the crater beckon. We climb down to them and stretch out, and while we shift uneasily on their hot surfaces, the steam from our damp clothing freezes and forms a thin coat of ice wherever the rocks do not touch. It is not an exactly comfortable spot. We clamber down and seek the ice caves. There the wind is kept from us, and we find comparative warmth in the great caverns that seem to stretch on and on. A crevice here and another there keep us back from exploration. The light seems strange in our eyes. We munch our chocolate, and we feel that nowhere is there rest for us. Then we climb back again to Columbia Crest, and brace ourselves to look out over the world. The sun shines down on us distantly. Far down below we see the mists clinging to the Camp of the Clouds.

But upon all sides of us, stretching mile upon mile, lay mountains, peaks, ridges, ranges; lofty heights and deep abysses. There are snow-crowned summits and again whole ridges enshrouded in the blue mist of fairyland. Jagged peaks against the azure sky, bold rocks and pinnacles thousands of feet in height and the gentler snow-white Adams, Baker, Hood, St. Helens, on and on as far as the eye can reach. And then over these ridges of the Cascade Mountains we look sixty miles

away to Puget Sound with its winding sapphire channels and bluffs. We see Seattle, Tacoma, Olympia, Bellingham and all the minor ambitious little towns in between — strange little blots. We look to the prairies of the east, and then swinging back and looking once more toward our beloved Puget Sound, we see the mighty Olympics, snow-crowned, bold, yet more rugged than the Tatoosh and the Sawtooth; Mount Olympus, majestic, stately, unapproachable, the Brothers, on and on, peak after peak, and through the glasses on beyond, dimly, faintly, but still there, the sweep of the great Pacific. Mountains and valleys and cities and lakes with an ocean thrown in for good measure. All these lay below the peak beyond Paradise Valley.*

That women may make this ascent is proven by such facts as that in July, 1910, a party of the Mountaineers' Association of Washington, sixty-two in number, with as many women as men, made the climb. They camped at the end of the first day above the 9,000 foot level, within sight of the dome, Columbia Crest, the summit of the mountain, 14,408 feet above the level of the sea. The following day they made the over-five-thousand feet ascent shortly after noon, spent an hour on the summit, returned to the 9,000 foot camp for the night, and descended to the valley the following day, proud of their record.

The United States Department of the Interior issues each year a detailed circular on Mount Rainier National Park, giving full particulars as to hotels, routes, charges, preparation for climbing, clothes, food, costs, etc., a copy of which will be sent free of charge to any one on application. A most excellent and beautiful book dealing with the mountain is entitled *The Mountain That Was God*, by J. H. Williams, of San Francisco, Calif., which can be obtained from any bookseller.

* A. Woodruff McCully, in *Overland Monthly*, June, 1910.

CHAPTER XXIV

CRATER LAKE, OREGON

IMAGINE climbing a mountain range, overlooking the northern portion of the Sun Down Sea, whose general average height is as high as Mt. Washington — the highest peak, East, North, or South in the United States from the Atlantic Ocean to the Rockies in Colorado — and with isolated peaks 1,000, 2,000 and nearly 3,000 feet higher yet. This is the Cascade Range in Oregon. Each of these peaks is an extinct volcano, and was once active. The fragments blown out from them by violent eruptions are scattered all about their original orifices and have thus built up great cinder cones, while from their bases have spread streams of lava — vast rocky blankets of varying thickness — which have raised the general level of the country up which we climb. Higher and higher we ascend until we reach the summit of the range, say between 6,000 and 7,000 feet, or the height of Mt. Washington, the crowning summit of the Presidential Range in New Hampshire.

There are several peaks, however, that still tower above us. To the southwest, about eight miles away, is Union Peak (7,881 feet). Fifty miles south we can see clearly the summits of the Siskiyous, which denote the boundary line between Oregon and California. To the north is Mt. Thielson (9,250 feet), not inappropriately called the Matterhorn of the Cascade Range — clearly it is volcanic, for

we can see the bright colored red, yellow, and brown of the burnt tuffs, interbedded with thin sheets of lava, the whole cut by an interesting network of dikes, radiating from the center of the old volcano. There is a peak immediately before us, and it is an important one; being a little higher than Union Peak, but not quite so high as Mt. Thielson. Up its lava and cinder-strewn slopes we climb, eager to look down into the empty and cold mouth and throat of what were once fiery furnaces, belching forth flame and molten rock in devastating floods. On its sides great blankets of half frozen snow now lie, and from these banks numberless tiny streams trickle, uniting further down, and sending floods to make the life-giving Rogue River, the Klamath, and the Umpqua.

Suddenly the remnant of the rim of the old crater is reached, and we prepare to gaze down into its awfully profound depths, when, to our absolute amazement and startled surprise — great as that of Balboa on Darien — we find ourselves looking into a crystal clear lake, half filling the vast cauldron, which careful measurements show to be fully 4,000 feet deep, and five and a half miles in diameter. There we stand, at 8,000 feet elevation; so, in round numbers, the lake's level is at 6,000 feet above the sea.

Such is the world-famed Crater Lake, of Oregon, called by its discoverer, John W. Hillman, on June 12, 1853, Deep Blue Lake, by others Mysterious Lake, Lake Mystery, Lake Majesty, Hole in the Ground, etc., and of which Joseph Le Conte once exclaimed: "Yellowstone has its glories, and so have the Yosemite and Crater Lake, but their grandeur is not in common. You cannot compare unlike things. There is but one Crater Lake."

Impressive in its grandeur; alluring in its great surprise; stimulating in its mystery; inspiring in its sublime majesty; satisfying in its supernal and almost weird loneliness, it produces an effect upon the mind of the traveled beholder entirely different from that caused by any other scene. The Grand Canyon of Arizona takes away one's breath and appalls in its stupendous vastness; the Yellowstone surprises with its unique hot-water fountains of such colossal height; the Yosemite thrills with its closed-in grandeur, supreme majesty, and supernal loveliness; the Painted Desert allures by its mystic coloring; the Big Trees almost oppress by their dominating supremacy, but Crater Lake produces a little of all these feelings, with added qualities of surprise, delight, and strangeness — emotions that are never forgotten or erased, no matter what one may see in after years.

To comprehend aright the marvelous changes that Nature has accomplished in the centuries ere she produced this unique Wonderland, let me ask the reader to recall the sublime majesty of Mt. Shasta — the Fuji-Yama of Northern California. This glorious pile is one of the dominating peaks of the continent, 14,380 feet above sea-level, rising with a majestic sweep of 11,000 feet from the gentle slopes about its base, gradually growing steeper upward to the bold peak. Its solitariness, its isolation from other peaks is one of its chief glories. Nothing dwarfs it, or injures it by comparison. Like a lone tree in a desert landscape, or Milan Cathedral, or St. Paul's, towering above the pigmy houses that surround them, it dominates every unoccupied thought, focalizes every undirected gaze. In this it differs materially from the mountain which once stood where Cra-

ter Lake now reposes in snug seclusion. For Mt. Mazama — the name given to this lost, this vanished giant of the Cascades — rose in the majestic, sublime, and awe-inspiring company of other peaks, from the general 6,000-foot level of the range.

Yet, originally, it must have towered as high as Shasta, 14,000 to 15,000 feet above sea level. On its slopes vast glaciers once formed and slowly carved the canyons of Sun and Sand Creeks, leaving their marks of deep glaciation easily to be read by the observant and studious. After these glaciers were formed and had begun their mountain sculpturing processes, the uneasy and fiery bowels of the earth again belched forth their molten and sulphurous flames, clouds of smoke and ashes, and torrents of lava, thus completely changing the spirit of the scene. Again, after a while, the Frost King reigned supreme and snow, *névé,* ice, glaciers ploughed down the lavas, cinders, conglomerates, and carried them to make soil for the valley below. How many times these antipodal experiences occurred I do not know, but unquestionably several times. How fascinatingly absorbing to have been able, with actual vision, to see such wonderful changes! Now clad in Arctic ice — then in fiery floods shot forth from hottest hell.

But these alternations were doomed finally to cease. A tremendous, gigantic, almost inconceivable change took place. The upper six to eight thousand feet of this vast cone disappeared.

Where and how?

The scientists tell us — and we listen because we have no better opinions than theirs — that there are two ways only in which this could have occurred. It was either by a sub-

sidence, which swallowed it up and digested it for further mountain building or world-crust-making elsewhere, or else there was a great explosion that shook the roof, as well as the roots, of the world and blew the whole head of the mountain away. In this latter case pumice and volcanic ashes would strew the country round about to great depths. This evidence is found. Yet something more important, impressive, and lasting would also have occurred. The upper walls of the crater would have fallen adown its slopes and left their crumbling mass as a silent testimony to the ruin their fall had occasioned. As a hundred-feet-high wall leaves a crumbling mass after it has tottered and fallen, so a great pile of basaltic blocks, wrecked and shattered, 1,000 or more feet high, should have been found at the base of Mt. Mazama. No such pile, however, is found.

So, though the evidences are not actually all in sight, the consensus of scientific deduction is that Mt. Mazama's crown was blown up and then fell into the boiling, bubbling, and seething crater and was re-fused and reabsorbed into the molten mass beneath. In support of this theory they point to a peculiar condition that is clearly seen to have existed at Rugged Crest, a point on the outer rim, between Round Top and Cleetwood Cove. Here the lava rose and flowed out of the crater, but before the central portion of the flow, where the mass was thickest, had congealed or solidified, the inner portion of the surrounding cone sank away, fell into the fiery gulf, and this yet soft mass began to *flow back* into the crater. But the outer crust of the mass still remained as an empty shell, and in due time it fell in and thus formed the wild, chaotic valley of tumbled fragments, columns, and bluffs that Rugged Crest now presents.

It is assumed that the volcanic cone of Mt. Mazama was raised higher and higher by the solidification of some of the outpouring lava at each successive flow, until it gained its maximum height. Then the column of molten material within arose, bubbling, seething, smoking, and bursting, until it was fully 8,000 feet above the base of the Cascade Range. Imagine so vast a mass of fiery liquid and its tremendous weight. The heat and weight combined, doubtless aided by other forces, compelled an opening far, far down on the mountain slope, through which the lava escaped. This left the weight of the cone unsupported, save by the thin shell of the mountain, which in due time collapsed, leaving it somewhat in the condition in which it is found today. The geologists, however, have not yet been able to find the escaped lava, and the search for it is still being carried on by those who are interested to know whether the above theory is a correct one.

Anyhow, in due time the volcanic fires within subsided, the falling snow melted, and water poured into the once active crater. The internal fires and subsequent collapse had sealed the basin so that the entering water had little outlet, and it has slowly accumulated until now it is nearly two thousand feet deep. Pure, clear, uncontaminated in any way, it is of the richest, deepest, amethystine blue, except close to the shore, where it blends into a rich turquoise. When the visitor rides over its surface in a boat the deep blue does not lessen, but the color becomes a little richer, or brighter.

Near the shore on the westerly side is a circular island, clearly at one time a volcano, 845 feet high, known as Wizard Island. In the top of it is an extinct crater 100 feet

CRATER LAKE

WIZARD ISLAND, CRATER LAKE

CRATER LAKE

ALTITUDE SIX THOUSAND FEET

deep and 500 feet in diameter. On Wizard Island a small lake, which is called Witch's Pool, has been formed of seepage from Crater Lake. Here we have the singular phenomena of a lake within a lake, and a perfect volcanic cone within another cone.

On the eastern side is another island, formed from the rim of the crater by erosion before the water had attained its present level in Crater Lake. It is a rugged monolith of basalt, carved by weathering into a rude resemblance to a ship, and with pinnacles which suggest masts. Hugging the eastern shore closely, it is very difficult to see under certain atmospheric conditions, hence its name, the *Phantom Ship*.

On May 22, 1902, Crater National Park was formed. It includes 249 square miles of the Cascade Mountains, the chief object of interest being Crater Lake. Yet there are many other naturally interesting scenic attractions that the visitor should see, such as the Pinnacles in Sand Creek Canyon, the Garden of the Gods at the head of Anna Creek Canyon, Dewie Canyon, Union Peak, Mt. Scott, etc. The Federal Government is building good roads, trails, etc., and the Crater Lake Company, Portland, Oregon, has established auto stage lines connecting the lake with the nearest railway stations, Anna Spring Camp, Crater Lake Lodge, store, livery, etc. This company will be glad to send circulars of information to all who desire them.

CHAPTER XXV

THE YOSEMITE VALLEY

IN the sixty-four or more years that have elapsed since its discovery, the Yosemite has lost none of its old-time power to charm and enthrall. In spite of the facts that the extension of railroads, the building of fine automobile roads, and the almost universal use of the motor car, have made accessible a thousand or more hitherto unknown scenic attractions, this peerless canyon valley still reigns supreme in the affections of those who know it best.

John Muir, who yielded his heart to its allurements when he first saw it in 1868, after wandering over the Old and New Worlds and drinking in their glories with the trained eye of a scientific and scenery-loving observer, still wrote in 1912:

No temple made with hands can compare with Yosemite. Every rock in its walls seems to glow with life. Some lean back in majestic repose; others, absolutely sheer, or nearly so, for thousands of feet, advance beyond their companions in thoughtful attitudes, giving welcome to storms and calms alike, seemingly aware, yet heedless, of everything going on about them. Awful in stern, immovable majesty, how softly these rocks are adorned, and how fine and reassuring the company they keep: their feet among beautiful groves and meadows, their brows in the sky, a thousand flowers leaning confidingly against their feet, bathed in floods of water, floods of light, while the snow and waterfalls, the winds and avalanches and clouds shine and sing and wreathe about them as

Photo by J. T. Boysen

ENTRANCE TO YOSEMITE VALLEY

Copyright by J. T. Boysen

EL CAPITAN, YOSEMITE VALLEY

the years go by, and myriads of small winged creatures — birds, bees, butterflies — give glad animation and help to make all the air into music. Down through the middle of the Valley flows the crystal Merced, River of Mercy, peacefully quiet, reflecting lilies and trees and the onlooking rocks; things frail and fleeting and types of endurance meeting here and blending in countless forms, *as if into this one mountain-mansion Nature had gathered her choicest treasures, to draw her lovers into close and confiding communion with her.* *

It is in the words I have italicized that Muir states one of the great charms of Yosemite. While the Park is extensive, taking in a vast area of many miles, the Valley itself is but about seven miles long, half a mile to a mile wide, and nearly a mile deep. In this limited area are found those distinctive features which have set the Yosemite apart as God-blessed beyond any similar area of mountain scenery on earth.

The approach is through a tree-lover's paradise, in which grow silver firs, Douglas spruce, sequoias, yellow and sugar pines, all of them colossal trees "as wonderful in fineness of beauty and proportion as in stature — an assemblage of conifers surpassing all that have ever yet been discovered in the forests of the world." In the earlier days — before the railroad was built, in 1905-7 — the stage roads ascended through these trees to the "rim" or edge of the Valley, so that it was on the margin of these incomparable forests that one's first glimpse was obtained — "a revelation in landscape affairs that enriches one's life forever."

Almost immediately the observant traveler realizes what Professor J. D. Whitney once wrote:

The peculiar features of the Yosemite are: First, the near approach to verticality of its walls; next, their great height, not only absolutely, but as compared to the width of the valley

**The Yosemite,* by John Muir, The Century Co., New York.

itself; and finally, the very small amount of *debris* or *talus,* at the bottom of these gigantic cliffs. These are the great characteristics of the valley throughout its whole length; but besides these, there are many other striking peculiarities and features, both of sublimity and beauty, which can hardly be surpassed, if equaled, by those of any other mountain scenery in the world.*

Let us take in to the full the first large, general impression, that overpowering sense of the sublime, that led Edwin Markham to write:

No man can stand before the majesty of Yosemite without feeling in some degree the divine emotion of sublimity, a sense of the unseen mystery of the world — without being stirred by a noble reverence for greatness, stirred, perhaps, to noble tears. . . . Yosemite is one of the sublimities of the world, walled in like the secret city of the Lama, pillared more stupendously than Karnak, carved and heaved and heaped by cosmic powers that belittle the engineering that lifted the Pyramids into time.†

Now we are ready to study the individualistic features that make up Yosemite — the incomparable. Again let me quote from *California, the Wonderful:*

Now, pushing on into the valley, El Capitan and the Cathedral Spires appear on either hand, propping the firmament — colossal cliffs of granite shaped out of the oldest substance at the core of the world. We might well pause here, for a mortal pen can give only a faint sense of the tranquil rapture, the turbulent glory, the divine dignity of Yosemite.

Cathedral Spires soar nearly to the level of El Capitan, but their look is less unearthly. They recall the works of man — Giotto's unfinished Duomo at Florence, ruined, perhaps, like poor shell-torn Louvain — ruined, yet glorious in ruin. Confronting the Spires, El Capitan soars upward in one sheer

* Quoted in Hutching's *In the Heart of the Sierras,* Oakland, Cal., 1888.

† *California, the Wonderful,* by Edwin Markham, Hearst's International Library Co., New York.

flight of 3,300 feet, impressing the soul with the sense of some final culmination, like the Last Judgment. There he stands, impervious, imperishable, with the aspect of immortality, the gesture of omnipotence.

Between the Spires and El Capitan lies the floor of the valley. Down its center slowly and beautifully meanders the Merced River, lined on either side with gloriously aspiring trees and exquisitely blooming flowers. As an added grace to the entrance to the Valley, Pohono, the Fall of the Evil Wind — the Bridal Veil Fall of the poetic whites — sways her mystic, enchanting column of wind-combed waters, dancing to a hidden rhythm, the very embodiment of graceful, serene, proud, self-contained movement, fascinating and hypnotizing us the longer we gaze.

Onward our chariot bears us into this valley of sky-pouring waterfalls and heaven-aspiring cliffs. In turn *Pompompasus,* the three leaping frogs — the Three Brothers — Sentinel Dome, Glacier Point, Yosemite Fall, the Royal Arches, Washington Column, and the North Dome come into view. But at the upper end of the valley, dominating it, even as El Capitan reigns king at the lower end, is the superlative ice-sculptured, storm-scarred face of shattered Half Dome, more sublime and awe-inspiring, stimulating and awakening in its rended mass than the smooth, complete North Dome on the other side of Tenaya Creek. What is it about this battle-worn old monarch of the skies and clouds that so instantly commands homage and veneration? Is it not its suggestion of battles bravely fought, storms proudly faced, dangers successfully withstood, hurricanes defiantly braved? When the cosmic forces were arrayed against it and hurled all its powers one after another upon

it, never for a moment did it flinch, waver, or retire. Undaunted and self-confident, regardless of what it suffered or endured, it stood its ground and is now a living, radiant embodiment of the triumphant spirit of Victory.

Nestling lovingly and confidingly at its base is Mirror Lake, that vision of supernal beauty, where two atmospheres and worlds meet, where there are two heavens and two earths, where the real meets the unreal, and the shadow is as absolute to the eye as the substance. Talk about the beauty of man-made things, the unequaled power of man's artistry! Man may carve a statue, shape a pitcher, build a palace, work cunningly in silver, gold, bronze, and iron, paint a picture, but none but the Divine could have created Mirror Lake, with its momentarily-changing panorama of reflected glories and kaleidoscopic colors.

Even yet we have not exhausted Yosemite. We return from Mirror Lake, swing to the right, pass the Happy Isles, ride up the tree-embowered trail to Vernal Falls, and then on and up to Nevada Falls, each a singing, wind-swayed, sun-glorified, air-friction-combed column of light, chanting its eternal songs of the joy of life. Circling and twisting higher and higher, the trail takes us to Glacier Point, from whence we gain new and startling glimpses of the floor of the Valley, 2,000 and more feet beneath, and of the far-reaching sublimity of the further peaks of the High Sierras, where Snow holds court all the year, and reigns supreme in his dazzling whiteness and purity.

From Glacier Point Hotel we ride out to the Mariposa Grove of Big Trees, or, if we prefer, we may return to the Valley, and ride around by stage to hospitable Wawona, where for years the Washburn Brothers, famous through-

Copyright, 1910, by J. T. Boysen

LOOKING DOWN INTO THE YOSEMITE FROM THE REAR OF HALF DOME

Courtesy of the Yosemite Valley Ry.

NORTH DOME

YOSEMITE VALLEY

out the world for their stage-craft no less than their warm-hearted and genuine reception of visitors from every part of the globe, hold forth, and go thence to the grove. Jusserand, the illustrious ambassador of the French Republic to the United States, with Mme. Jusserand, on their trip to the Pacific Coast were limited for time. But they had resolved upon the Yosemite trip. As the days of their sojourn were devoured, one by one, they dashed down from San Francisco to the Valley, but merely took the glances at it that passing by its portal allowed. They had thought it all over beforehand, and turning to Mr. R. A. Donaldson, of the Southern Pacific Company, who was their pilot, exclaimed: "We do not wish to minimize Yosemite, yet we have cliffs and waterfalls and lakes in Europe. These we can see any time. But in all Europe there are no Big Trees. So let us give all the time we have to them."

And as they stood in the presence of these solemn and hoary giants of the arboreal kingdom, these oldest of living things, and greatest, that have lived on "majestically, serious, and reticent, in their green eternity, through the crash of the human centuries and the ruin of destinies and dynasties," they acknowledged their supremacy and, looking and studying in reverent silence, turned away, after several hours, satisfied.

So with all visitors to the Yosemite and its neighboring Big Trees. None leave it unsatisfied, except save in one thing — they have not had enough. They must come again, and they do. I have been visiting it as often as I could for over thirty years, and I hope to have the increasing pleasure for many more.

To render it easily accessible, the Yosemite Valley Rail-

way has been built to the very edge of the Park. It connects with both the Southern Pacific and the Santa Fe at Merced. At El Portal it has erected a commodious, architecturally pleasing, rustic hotel, placed it under first-class management, and rendered it a most desirable stopping place preparatory to taking the automobile, tally-ho, or buggy trip into the Valley.

The Yosemite is under the control of the Department of the Interior, and from the Superintendent (addressed at Yosemite Valley, California) those interested may secure full information, maps, etc., as well as instructive folders from the representatives of the three railways named.

CHAPTER XXVI

THE BIG TREES OF CALIFORNIA

God set seven signs upon this land of ours
To teach, by awe, mankind his wondrous powers;
A river sweeping broadly to the sea;
A cataract that thunders ceaselessly;
A mountain peak that towers in heaven's face;
A chasm deep — sunk toward the nether place;
A lake that all the wide horizon fills;
A pleasant vale set gem-like in the hills;
And, worthy younger brother of all these,
The great Sequoia, king of all the trees.

— Charles Elmer Jenny.

EVER since their discovery the Big Trees of California have excited the admiration of the world, the wonder of travelers and sight-seers, and the constant interest of scientists. As the years have passed there has been no diminution of the regard, but a constantly increasing desire to see them. The result is that the spirit of commercialism that would have continued ruthlessly to destroy them has been curbed, and several more or less extensive areas have been preserved for the benefit of posterity.

There are in California two varieties of sequoia — the *gigantea* and the *sempervirens*. The former are found only on the western slopes of the Sierra Nevadas at an altitude from about 4,500 to 7,500 feet, and the latter near the coast, seldom more than fifty miles away from the Pacific Ocean, and extending in a belt from the Oregon boundary

line as far south as San Luis Obispo County. Both trees are evergreens, but in the *sempervirens,* commonly known as the California redwood, the leaves are elongated, borne on short stems, and extend forward and outward from the main stem in a flat spray. Their cones are about the size of a thimble, ripening in one season but persisting on the branches after the seeds have been discharged. In the *gigantea* the leaves are awl-shaped, sessile (stemless), and extend around the main stem. The cones are as large as hen's eggs, and mature the second autumn after formation. The seeds are tiny and flat, and could easily be confused with parsnip seeds. Though both bear seeds, the *redwood* generally reproduces itself from the stump. I have counted as many as three hundred young trees springing up around the stump of a felled tree. Nowhere is Nature more generous than in the reproduction of these beautiful forest monarchs. They fairly crowd one another in their desire to grow. In time the larger and more powerful succeeds in rising above the others. They grow in forests in vast numbers which cover hundreds of thousands of acres, while, on the other hand, the *gigantea* stand only in clusters, or groups, in fellowship with other conifers. Hence we seldom speak of the *forests* of *gigantea*—only in one case, the Giant Forest—but always of *groves,* as Mariposa Grove, Calaveras Grove, Fresno Grove, etc. The *gigantea* reproduce entirely from seed.

It is curious to notice that the *sempervirens* has a tendency to form, in its upper branches, a leafage like that of the *gigantea,* thus bearing testimony to their relationship.

There are three or four groups or forests of redwoods (*sempervirens*) easy of access, and I will write of these first.

To the visitor in San Francisco an easy group to reach is commonly known as the Santa Cruz, or Fremont Group. These trees are located on the Santa Cruz branch of the Southern Pacific Railway, and the trains stop at Big Tree Station, after a seventy-three-mile ride from San Francisco, which occupies two hours and a half. The whole of this ride is interesting, for it includes the peninsula, Palo Alto, San José, with glimpses of the Lick Observatory, on Mt. Hamilton, the world-famous Santa Clara Valley, with its eight million fruit trees, and then the Santa Cruz Mountains, so graphically described by Bret Harte in some of his earlier stories. This grove of trees is privately owned and a small charge is made for seeing them.

But a few miles further on, sixteen miles from Santa Cruz, and seven from the Boulder Creek Station of the Southern Pacific, is the California State Redwood Park, a forest of 3,800 acres, popularly known as the Big Basin. It is a region of volcanic fires, of upheavals and earthquakes, of shattering cataclysms and profound disturbances. There are clear records of nine distinct and far-reaching upheavals, as revealed in as many profound inconformities, and that volcanic fires raged in several epochs, one of them for a considerable period, is equally well evidenced. It includes fully 14,000 acres, is irregularly basin-shaped, with the lower rim towards, and close to, the Pacific Ocean.

When the people of California began to realize that the men who thought more of lumber and its cash value than of Nature's teachings and what we owe to posterity were rapidly denuding California of its *sempervirens*, led by Ralph S. Smith, an editor of Redwood City, in the eighties, and later, in 1900, by Josephine Clifford McCrackin, Carrie

Stevens Walter, Andrew P. Hill, an agitation was begun, and carried on successfully, to "Save the Redwoods." The Sempervirens Club was organized, a fight for a State Park inaugurated, and in 1901 the California legislature passed a bill providing for the purchase of a State Park in the Big Basin. Three thousand, eight hundred acres were ultimately purchased with the $250,000 appropriation and the California Redwood Park came officially into existence.

For several years the only entrance was by way of Boulder Creek, but in 1915—California's memorable Panama Exposition year—a new road was completed direct from San José, which is now being used daily for automobiles.

This Park is not merely a forest of *sempervirens*. It is a nature palace of delight, with exhibits of a thousand other varieties of trees, shrubs, plants, vines, flowers, mosses, rapids, cascades, waterfalls, creeks, boulders, rocks, hanging gardens, and fallen logs, enlivened by songs of towhees, thrashers, juncos, mocking-birds, white and golden-crowned sparrows, bluebirds, rock-wrens, and canyon-wrens, and the harsh calls of the catbirds and jays.

But it is chiefly to the redwoods that the visitor is attracted. Reaching a height of 275 feet and an extreme diameter of twenty-two feet, they stand, *the oldest living things known*. D. M. Delmas, one of California's native orators, in a speech before the state legislature, thus describes the emotions he experienced in their presence:

> A sense of humility overwhelms you as you gaze upon these massy pillars of Nature's temple, whose tops, lost amid the clouds, seem to support the vault of the blue empyrean. The spell which the mystic light of some venerable cathedral may

at times have thrown upon your soul is tame compared to that which binds you here. That was man's place of worship; this is God's. In the presence of these titanic offspring of Nature, standing before you in the hoar austerity of centuries, how dwarfed seems your being, how fleeting your existence! They were here when you were born; and though you allow your thoughts to go back on the wings of imagination to your remotest ancestry, you realize that they were here when your first forefather had his being. All human work which you have seen, or conceived of, is recent in comparison. Time has not changed them since Columbus first erected an altar upon this continent, nor since Titus builded the walls of the Flavian amphitheater, nor since Solomon laid the foundations of the temple at Jerusalem. They were old when Moses led the children of Israel to the promised land, or when Egyptian monarchs piled up the pyramids and bade the Sphynx gaze with eyes of perpetual sadness over the desert sands of the Valley of the Nile. And if their great mother, Nature, is permitted still to protect them, here they will stand defying time when not a stone of this capitol is left to mark the spot on which it now stands, and its very existence may have faded into the mists of tradition.*

There are several noted trees, as the Father of the Forest, the Mother of the Forest, etc., which all visitors should not fail to see. Nearer, still, however, to San Francisco are the Muir Woods. These are just across the bay, seven miles in a straight line from the City of the Golden Gate. They are reached by ferryboat to Sausalito and thence electric car to Mill Valley, and the Mt. Tamalpais and Muir Woods Railway. This remnant of a redwood forest is one of the most noted spots in California. The land, comprising 295 acres, was purchased by Congressman William Kent and his wife, Elizabeth Thatcher Kent, and presented, December 31, 1907, to the people of the United States, through the Secretary of

* *California Redwood Park,* by Arthur A. Taylor, W. Richardson, Sacramento, Cal.

the Interior. It was named after John Muir, the poet-scientist-naturalist of the mountains of California, and comprises many redwoods which have a height of 300 feet and a diameter of eighteen feet and more.

In the northern part of the state there are still several large tracts, virgin and untouched. The people of Humboldt County are now seeking to have one of these fine tracts of the largest remaining trees set apart as a State Forest, in which laudable desire all patriotic citizens will aid and wish them Godspeed.

We must now turn, however, to the other variety of Big Trees, the *Sequoia Gigantea,* which is the king of all trees, both in age and size. We are told they grow sometimes 400 feet high, and numbers of them have a girth of seventy to ninety feet. The largest found was thirty-five feet, eight inches in diameter, *inside the bark.*

In the chapter on the Yosemite a brief reference is made to the Mariposa Grove. This is reached by stage from Glacier Point, Wawona Hotel, Sentinel Hotel in the Yosemite Valley, or El Portal at the end of the Yosemite Valley Railway.

The Merced and Tuolumne Groves are a short distance beyond the northeastern boundary of the Yosemite National Forest, and are reached by auto-stage from El Portal.

The Calaveras Grove was the first one discovered. It was found in 1852 by A. T. Dowd, a professional hunter, and the tree he first saw was afterwards cut down. Its size can best be imagined by the fact that on July 4, 1854, J. M. Hutchings vouches that he was one of a cotillion party of thirty-two persons who danced on the stump, and that besides the dancers there were seventeen additional

A CLUSTER OF SEQUOIAS IN MUIR WOODS

COMPARISON OF ONE OF CALIFORNIA'S
BIG TREES WITH A CHURCH

musicians and onlookers, making forty-nine occupants of the surface. It was originally 302 feet high and ninety-six feet in circumference. Some money-making vandal removed the bark to a height of thirty feet, and sent it to the celebrated Crystal Palace, in London, where it was afterwards burned.

In this grove of fifty acres there are ninety-three trees of large size, twenty of them exceeding twenty-five feet in diameter. It is reached by the Sierra Railway from Oakdale (where change is made from the cars of the Southern Pacific) to Angels, and thence by stage. Six miles south of the Calaveras Grove is the South Park Grove, containing over 1,380 trees.

September 25, 1890, Congress set apart 161,597 acres in Tulare and Fresno Counties as the Sequoia National Park, and October 1 of the same year, 2,536 acres as the General Grant National Park. These may both be reached by the San Joaquin Valley lines of both the Southern Pacific and Santa Fe Railways. Full information of routes and distances can be gained from folders issued by both railways, and also from a government pamphlet which may be obtained from the Superintendent of Public Parks, Monadnock Building, San Francisco.

John Muir, Smeaton Chase, W. L. Jepson, and many others have written wonderful words inspired by the noble presence and sublime majesty of these trees. Here is what Edwin Markham says in his recent book, *California, the Wonderful:*

> They stand hushed and serene in the midst of lesser trees whose boughs tremble to every wind that blows. The immobility of the sequoias is as wonderful as their immensity.

Yet the extreme tops of the trees wave in the wind; and impressive and sublime is the motion of their lofty branches. But their massive boughs, however, do not appear to sway, and whenever these ancients of the wood take counsel with one another in the upper air, no whisper of it drifts down to the listener on the ground. They appear to stand in eternal calm.*

Elsewhere in the same book he says:

Majestical, symmetrical, unshaken by wind and storm, each tree approaches almost perfectly the archetypal: there is no other tree so Aeschylean in dignity. Unsubdued by Time, the sequoias stand in their places as the oldest watchers of our world.

* Hearst's International Library Co., New York, 1914.

CHAPTER XXVII

THE LAKE OF THE SKY — LAKE TAHOE

I HAVE called Lake Tahoe the Lake of the Sky because the name is singularly appropriate. It is the largest lake, with but one exception, at its altitude — 6,250 feet — in the world. Its waters more nearly resemble in color the pure, deep blue of the high Sierran sky than the water of any lake I know; and, further, it so perfectly mirrors the varying effects of the sky, in clouds, color, and atmosphere that it becomes in itself an inverted sky — a sky seen below, instead of above.

Slowly Lake Tahoe is coming into its own. Even those living nearest to it, Californians and Nevadans, do not yet appreciate and know it as they will ere long. There is nothing in the Alps, in Italy, in France, or Spain that equals it. Though only a mountain lake of ordinary type, it can be said truthfully that it and its environment are unique and incomparable. Just as there is but one Yosemite, one Yellowstone, one Grand Canyon, one Crater Lake, there is but one Lake Tahoe.

Why?

Let us see if this bold statement can be made good. There are eight points, in all of which Lake Tahoe is incomparable:

(1) Geological history, which includes the continental uplift, great volcanic activity, glacial denudation on a large scale, and its present varied features and environment.

(2) Its abounding glacial lakes, of exquisite beauty and charming surroundings. There are literally not scores, but hundreds, of them, and each one seems more enchanting than the others.

(3) In these lakes fishing of the finest game trout in the world is constant during the season. The clear, cold, crystal waters, flowing directly from glacial fountains, make ideal conditions for the life of the native trout, and the Loch Levin, Eastern Brook, Mackinac, and other varieties that are sent in by the million from the various hatcheries. The angler is ever sure of his sport and the epicure of his delicious trout.

(4) The trees of the High Sierras in the Tahoe region are not surpassed, and I doubt much whether they are equaled in variety, number, size, and beauty, in any region of similar area in the world.

(5) The variety of the scenery of Lake Tahoe and the Tahoe region is ever the marvel of its lovers and most frequent visitants. Hovering over it and almost completely surrounding the Lake are snow-clad peaks, from 9,000 to 12,000 feet high, bathed in a sky of the most ineffable blue and in an atmosphere as pellucid as that in which Euripides saw the Athenian soldiers marching. Each of these peaks bids the visitor climb to supernal heights and dazzling outlooks. Below are the hundreds of glacial lakes before referred to, and on the slopes are the glorious trees that enchant the eye. Hanging directly over Glacial Valley is the last great crest of the Sierra Nevada Range, with Pyramid and Agassiz Peaks towering above the narrow ridge, where glaciers nestle and tell of the past ages when the ridge was 5,000, 7,500, perhaps 10,000 feet higher than it is at the present day, and when great glacial blankets

Copyright, Harold A. Parker

CARNELIAN BAY, LAKE TAHOE

flowed down on their gouging, scooping, polishing, beveling errands into the valleys below. Then, to the east, lie the sagebrush levels of Nevada, surrounded by their colorful but always verdureless hills, where gold, silver, and other precious minerals have been found into the scores of millions of dollars. Nearby are the clearly indicated remnants of the prehistoric Lake Lahontan, which reaches from the foothills of the eastern Sierras clear across Nevada and into Utah, with a corresponding width, north and south.

(6) Nor is this wonderful variety of scenery confined to the immediate neighborhood of Tahoe. It affects all the approaches, the railroads and automobile roads, that make it so easily accessible. The Southern Pacific from the east (Ogden route) crosses the sagebrush wastes of Nevada just before it climbs into the very heart of the rugged, tree-clad, verdant, snow-covered Sierras. What a marvelous change and contrast in a few hours. Coming from the west, the Sacramento Valley is crossed, the orchard-blessed foothills of the gentle western slopes of the Sierras, and finally the heaven-aspiring summits. The change from both directions is at the same place, Truckee, and here the cars of the Lake Tahoe Railway & Transportation Company are taken, and for an hour one rides enchanted by the side of the picturesque Truckee River, whose course is the only outlet possessed by Lake Tahoe, though a hundred streams and springs empty into it, and whose waters now flow placidly and smoothly through open meadows and anon dash wildly through lava-lined canyons and over rocky boulder beds which churn them into whitest foam. Automobiles have even more wonderfully varied scenery. Coming from the east they enter a land of enchantment, after leaving the

sagebrush plains, for the ride from Reno — and there are three separate and distinct routes that may be taken — all lead through tree-clad mountain slopes on well engineered and cared for roads. From San Francisco the course to Sacramento is the same, then the roads fork and two routes are open, one by way of Placerville and the other by Emigrant Gap and Donner Lake. Both are historic roads, hallowed by sacred associations of hardy pioneers, and later by eager gold-seekers coming to California or leaving for the newer developed fields of the Comstock at Virginia City, and both are picturesque and sublime, as all roads over the Sierran barrier must be. The State of California sees to it, however, that the roads are as good as they can be made and the separate counties keep them in condition. There are two other roads for those who wish to come up by motor from the south — Los Angeles and San Diego. One route is through the fertile San Joaquin Valley to Sacramento (with, by the way, an additional choice of a road up the Pacific Coast, by Santa Barbara, San Luis Obispo, and Monterey), while the other is over the Walker Pass, at the southern end of the Sierra Nevadas, and up on the eastern side of this Range of Light, where snow-clad peaks that equal the Alps seem to be directly overhead.

(7) This brief and scant description of the various approaches renders the seventh point merely to be mentioned; viz., ease of access. Few places, even in populous Europe, can be reached so easily, quickly, and cheaply as can Lake Tahoe.

(8) There now remains but one point to elucidate, and that is one which few understand. Yet it is important in the extreme to one class, perhaps several classes of visitors.

That is, the *climatic hospitality* of the Tahoe region. It never fails, winter or summer, to extend the hands of warm and kindly hospitality. Not that there are no storms in the Tahoe region in winter. There are many, and sometimes they are very severe, where the wind blows and snow falls heavily. But storms come and go, and never last long, and when they have gone, ah, who can tell the sweet purity of expanse they leave behind them, the sense of heavenly cleanliness that mortals seldom feel, as well as the indications of power and supremacy they reveal! In the spring, summer, and autumn, however, there are practically few storms. Then the whole Sierras seem to smile hearty welcome to visitors. They bid them enter and possess the land. To camp out in such mountains is inexpressible delight.

No mosquitoes to speak of, no dangerous reptiles or animals, no poisonous plants or vines, no pitfalls, no hostile Indians, few disadvantages of any kind, but, on the other hand, abundance of shade, crystal water, lakes abounding in fish, trees alive with game birds, forests where roam innumerable deer and other game. Fine trails have been engineered and built to every salient point, and obscure nooks of divine beauty opened up for man's delectation. The lakes have all been stocked with trout and here a man may loaf and invite his soul to his everlasting content and benefit, and a woman may learn afresh that life may be a perpetual joy instead of a maddening round of insanity-absorbing functions.

Here, then, in brief outline, I have suggested why Tahoe is incomparable. A few more touches must suffice for this necessarily imperfect and inadequate picture. To provide for the needs of the thousands of people who annually visit

the Tahoe region a number of hotels and camps have grown up. First among these is Tahoe Tavern, on the edge of the Lake, and the terminus of the Lake Tahoe Railway. Built in a style appropriate to its forest and lake surroundings, equipped so as to satisfy the needs of the most exacting and experienced traveler, its management may be characterized as ideal. Here, also, are golf links, tennis courts, as well as the finely equipped Casino, where ballroom, bowling alley, and the score and one other indoor games of popular fancy are provided. In addition, the Tavern owns its fleet of fine power launches, fishing boats, etc., with capacities from 200 down, so that parties can be formed for riding on the lake, fishing, etc. Yet while the Tavern is first-class in every respect it anticipates and expects that many of its patrons come to the Lake for a surcease from social exactions, hence one enters the dining-room or lounging-room as freely and as welcome in a riding suit or golfing costume as if clothed *de rigueur*.

In the other hotels and camps of the region every variety of taste is provided for, and demands upon the purse vary in like degree.

During the season steamers ply around the Lake, seventy miles, one working down the western side, southward, and around by the eastern Nevada side, to the north, and back to the Tavern, and the other in the reverse direction, so that ready and easy access is afforded to every portion of the Lake.

There are a score or two of mountain peaks, ranging in elevation above sea-level from eight to twelve thousand feet, within easy walking or riding distance of the hotels and camps. The level of the Lake itself is over 6,000 feet,

Courtesy of H. C. Tibbitts

CAVE ROCK, LAKE TAHOE

LOOKING NORTH FROM CAVE ROCK, LAKE TAHOE

RUBICON POINT, LAKE TAHOE

as before noted, so that one starts his climb at a high altitude. Finely engineered trails have been built to afford comparatively easy access to all these peaks, and the city dweller here becomes the Sierran climber to his great physical and mental advantage. Trees in glorious variety and profusion, wild flowers in such a bewilderment of procession as to dazzle one unused to the prolific exuberance of Nature on the Pacific Coast, and birds galore add joy to the outings, and the fact that the Lake is seldom long out of sight gives added enjoyment, for its delights are ever changing and each new change seems to make it more entrancingly beautiful.

Then, too, to render its charms more easy of daily and hourly access, the State Highway Commission of California two years ago completed a fine highway for automobiles reaching from the Tavern at the north end of the Lake to Tallac House at the south end. This, with roads already built, practically afford one the opportunity for a ride around about two-thirds of the Lake's circumference, and every mile of it is a mile of enchantment. Hence motor cars come daily, during the season, by the scores, even the hundreds, and the Tavern's large accommodations are taxed to the limit. Therefore it will be seen that the Tahoe region is not only worthy to be ranked as one of America's wonderlands, and already is beginning to enjoy the fame that belongs to it, but that each year will see it more widely heralded around the world.

And yet, in my necessarily brief description of Tahoe, I have said nothing as yet of its chief charm to many visitors, namely, the gloriously exquisite colors of its waters. Here is what Mark Twain said about the Lake:

At last the Lake burst upon us — a noble sheet of blue water lifted six thousand three hundred feet above the level of the sea, and walled in by a rim of snow-clad mountain peaks that towered aloft full three thousand feet higher still! It was a vast oval, and one would have to use up eighty or a hundred good miles in traveling around it. As it lay there with the shadows of the mountains brilliantly photographed upon its still surface I thought it must surely be the fairest picture the whole earth affords.

After supper, as the darkness closed down and the stars came out and spangled the great mirror with jewels, we smoked meditatively in the solemn hush and forgot our troubles and our pains. In due time we spread our blankets in the warm sand between two large boulders and soon fell asleep. * * *

It is always very cold on that lake shore in the night, but we had plenty of blankets and were warm enough. We never moved a muscle all night, but waked at early dawn in the original positions, and got up at once thoroughly refreshed, free from soreness, and brim full of friskiness. There is no end of wholesome medicine in such an experience. That morning we could have whipped ten such people as we were the day before — sick ones, at any rate. But the world is slow, and people will go to "water cures" and "movement cures" and to foreign lands for health. Three months of camp life on Lake Tahoe would restore an Egyptian mummy to his pristine vigor, and give him an appetite like an alligator. I do not mean the oldest and driest mummies, of course, but the fresher ones. The air up there in the clouds is very pure and fine, bracing and delicious. And why shouldn't it be? It is the same the angels breathe. I think that hardly any amount of fatigue can be gathered together that a man cannot sleep off in one night on the sand by its side. Not under a roof, but under the sky; it seldom or never rains there in the summer time.*

To return to the colors of Lake Tahoe, Emerald Bay and Meek's Bay are justly world-famed for their triumphs of color glories, for here there seem to be those peculiar com-

* *Roughing It*, by Mark Twain. By kind permission of Harper & Bros., New York.

binations of varied objects and depths, from the shallowest to the deepest, with the variations of colored sands and rocks on the bottom, as well as queer-shaped and colored boulders lying on the vari-colored sands, that are not found elsewhere. The waving of the water gives a mottled effect surpassing the most delicate and richly-shaded marbles and onyxes. Watered-silks of the most perfect manufacture are but childish and juvenile attempts at reproduction, and finest Turkish shawls, Bokhara rugs, or Arab sheiks' dearest prized Prayer Carpets are but glimmering suggestions of what the Master Artist Himself has here produced.

These are not the glowing colors of sunrises and sunsets, but they are equally sublime, awe-inspiring, and enchanting. There are Alpine-glows and peach-blooms and opalescent fire-gleams and subtle suggestions that thrill moment by moment and disappear as soon as seen, only to be followed by equally beautiful and surprising effects, and with it all a mobility, a fluidity, a rippling, flowing, waving, tossing series of effects that belong only to enchanted water — water kissed into glory by the sun and moon, lured into softest beauty by the glamour of the stars, and etherealized by the quiet and subtle charms of the Milky Way, and of the suns, comets, and meteors that the eye of man has never gazed upon. . . .

The blue alone is enough to impress it forever upon the observant mind. Its rich, deep, perfect splendor is a constant surprise. One steps from his hotel, not thinking of the Lake — the blue of it rises through the trees, over the rocks, *everywhere,* with startling vividness. Surely never before was so large and wonderful a lake of inky blue, sapphire blue, ultramarine, amethystine richness spread out for man's enjoyment. And while the summer months show

this in all its smooth placidity and quietude, there seems to be a deeper blue, a richer shade take possession of the waves in the fall, or when its smoothness is rudely dispelled by the storms of winter and spring.

The great scientist — the John Tyndall of the Pacific Coast — John Le Conte, at one time President of the State University of California, thus expressed himself:

When quietly floating upon the placid surface of Lake Tahoe, the largest of the "Gems of the Sierra" — nestled, as it is, amidst a huge amphitheater of mountain peaks — it is difficult to say whether we are more powerfully impressed with the genuine child-like awe and wonder inspired by the contemplation of the noble grandeur of nature, or with the calmer and more gentle sense of the beautiful produced by the less imposing aspects of the surrounding scenery. On the one hand, crag and beetling cliff sweeping in rugged and colossal massiveness above dark waves of pine and fir, far into the keen and clear blue air; the huge mantle of snow, so cumulus-like in its brightness, thrown in many a solid fold over ice-sculptured crest and shoulders; the dark cathedral-like spires and splintered pinnacles, half snow, half stone, rising into the sky like the very pillars of heaven. On the other hand the waving verdure of the valleys below, the dash of waterfalls, the plenteous gush of springs, the laugh and dance of brook and rivulet as they hurry down the plains. Add to this picture the deep repose of the azure water, on which are mirrored snow-clad peaks, as well as marginal fringes of waving forests and green meadows, and it is difficult to decide whether the sense of grandeur or of beauty has obtained the mastery of the soul.*

Folders containing full information of Lake Tahoe may be obtained free by addressing the Advertising Department of the Southern Pacific Railway Company, San Francisco, or the Lake Tahoe Railway & Transportation Company, Rialto Building, San Francisco.

* Quoted in *The Lake of the Sky*, by George Wharton James.

CHAPTER XXVIII

THE CHANNEL ISLANDS OF CALIFORNIA

WHEN Cabrillo sailed up the western coast in 1542, and thus became the man we remember as the first white ever to gaze upon California and make its wonders known to the world, he little dreamed that he was destined to leave his bones to bleach on the wind and sun-swept sand-dunes of one of the islands that he was the first to see. There are about twenty of these, most of them visible on a clear day from Santa Barbara, and two or three from Mt. Lowe, Pasadena, or Los Angeles harbor at San Pedro. The best known and oftenest visited is Santa Catalina, named by my learned and poetic friend, Charles Frederick Holder, "the Island of Summer." And surely it is an island of summer. Laved forever in the warm waters that flow up thus far from the South Pacific Ocean, its north side is a place sheltered from the winds where no surf or beating waves ever dash angrily over its sandy beaches and pebbly strands, and the climate from October to May seldom demands an overcoat. In December violets and roses, bougainvillea and Easter lilies, poinsettias and cannae; aye, and even the delicate heliotrope are in full bloom, and one sits on the lawn reading the newspaper in his shirt sleeves.

Steamers ply back and forth constantly, winter and summer alike, carrying thousands of visitors and hun-

dreds of regular residents, for the town of Avalon has a steady population of several thousands, which is constantly increasing.

While Santa Catalina and some of the other islands are privately owned, others belong to the government, and the largest of these, San Clemente, which has the reputation of possessing the most remarkable sea-angling in the world, is practically a national fish and game preserve.

The scientists assure us that these islands were once a portion of the mainland, or, no, perhaps it would be nearer the truth to say that they *tried* to become so. When the uplift from the primeval ocean took place that raised the coast of California out of the ooze of sea-bottom and made it into mountain and valley, these island areas struggled up so far, and then stopped, having merely succeeded in raising their heads above the drowning point. Some came up higher than others, and these form the important islands of today, San Clemente, Santa Catalina, Santa Cruz, Santa Rosa, and San Miguel. They are all Sans or Santas (saints, male or female) because, when, sixty years after Cabrillo, Sebastian Vizcaino came, he named them all (ignoring the names given by their real discoverer) after the Saint's Day on which he first saw them.

In those days they had quite an Indian population, but it has since disappeared, though relic hunters every now and again dig up utensils and implements that clearly indicate both large regular population and incidental visitation. Hence the Indians must have been boat-builders of some kind and fairly familiar with the simple navigation of the waters between the islands and the mainland. They were great traders, too, for the soapstone mortars from the

COAST LINE NEAR AVALON, CATALINA ISLAND

Photo by Reyes

ARCH ROCK, SANTA CRUZ ISLAND, CALIFORNIA

quarry on Santa Catalina Island are found scattered all up and down the coast.

The quarry itself is still there — as the Indians left it — with great mortars half quarried out of the sloping face of the cliff, looking like some new kind of geologic conglomerate, formed of Indian mortars, pestles, and other utensils, and powdered up, slippery rock, all stuck together, with some of the bigger ingredients sticking out of the general mass.

Graves, too, have been found, with bones and skulls, together with stone sinkers, obsidian arrow and spear points, bone whistles, flutes made beautiful with pearl mosaic, stuck on with asphaltum, strings of bead necklaces, etc. Tons of these interesting aboriginal remains have been dug up, and they now adorn the Smithsonian Institution and the museums of the world.

But the Channel Islands are peculiarly interesting as one of the chief playgrounds of the world of fishermen. The angler finds here his paradise. Anyone who has seen the hosts of leaping tuna, long-finned tuna, yellowfin, white sea bass, leaping swordfish, yellowtail, monster June, sunfish, and other fish, gathered in as I have seen them at Catalina, does not need to be told that here is one of the rare spots of the world for the fisherman. It makes no difference where the angler comes from, and what his catch. He can spin his biggest yarns, and risk his salvation never so freely — it is all waste time and useless endeavor at Catalina. The merest tyro laughs at him and caps his stories with others so outrageously wonderful that belief at first seems impossible. Yet on being challenged by even so much as the lifting of an eyebrow, the challenger is

squelched utterly by having a photograph of the catch, with size, weight, and time occupied in landing, size of rod and thickness of line, sworn to and certified by witnesses and a notary. Oh, they do things in famous style at Catalina, and there is no gainsaying them. For instance, Dr. Holder deliberately tells, in cold blood, of catching a leaping tuna, with a twenty-one line — whatever that is — the fish being six feet four inches in length and weighing 183 pounds, and was "the embodiment of what is best in the tribe of tuna, the hardest fighting game fish known, rich in reserve and force, prolific in expedient, and invested with an inexhaustible supply of that something which, translated, means 'dying game.'" And the record of the Tuna Club for 1909 shows sixty-five tuna caught, of which sixty-two weighed over 100 pounds, the largest being 153 pounds, the smallest sixty-eight pounds, and the average totaling 118.2 pounds. The record tuna ever caught was that of Colonel C. P. Morehouse, of Pasadena, in the season of 1900, and it weighed 251 pounds. The following year a lady, Mrs. E. L. Dickerson, of New York City, held the record with one of 216 pounds. As for black bass the records are as follows: 1898, 327 pounds; 1899, 372 pounds; 1900, 384 pounds; 1901, 384 pounds; 1902, 419 pounds; 1903, 425 pounds; 1905, 436 pounds; and yellowtail have been caught up to forty-eight pounds; white sea bass, sixty pounds; albacore, forty-one and three-quarters pounds; and swordfish, 125 pounds.

The Tuna Club was organized to shame out, force out, drive out — anything legitimate to get rid of the scoundrel — the game hog, the killer for killing's sake, who thought of nothing but the slaughter he could accomplish. It was

organized in 1878 by Dr. Holder. Up to that time "boats left Avalon Bay with from four to ten heavy hand-lines, and tunas and yellowtail and sea bass *were slaughtered by the ton and thrown away.*" To reform and prevent this state of affairs was the object of the club; to give the fish a fighting chance; to elevate the standard of sport on the Pacific Coast, either in fresh or salt water; to protect game fish in every way; and to set an example of the highest possible sportsmanship. The result is that, today, not a boatman of Santa Catalina will permit a hand-line in his boat, and any unsportsmanlike conduct is not only frowned upon but absolutely forbidden. To encourage the boatmen in well doing prizes are given to them, as well as to the sportsmen who engage them.

Every year tournaments are held and noted anglers from all quarters of the globe come to them. The quality of the fish caught may be learned from a glance at the official records — and the following unofficial story. The Tuna Club has a beautiful and commodious clubhouse. Its porch overlooks the placid Pacific, the home of the fish that are so eagerly sought. Seated on this porch, in the restful content that comes over a man after a successful day's sport, followed by a satisfactory dinner, anglers are apt to become reminiscent and tell of their most remarkable achievements. At one of the tournaments two noted New Yorkers were present, as guests of the club. They were "jolly good fellows," hence were quickly initiated into the good fellowship section of the club, privately named the Porch Club. One evening one of the members began to "reminisce"; others followed, the fish in each case growing larger, until the Easterner's eyes grew like poached eggs, so that one might

have hung his hat on them. At last, after several particularly large fish had been landed — in the stories — one visitor could not refrain from the comment: "But, my dear sir, those must have been whales you were catching." "Whales?" responded the narrator, "Whales? Why, we were using whales for bait!"

While I regret it, I must leave the subject right here. That the angler, as well as general sightseers, will enjoy Santa Catalina, and the others of the Channel Islands, I can guarantee — at least as positively as the fisherman can his use of whale as bait. While Santa Catalina is the only island popularly, easily, and cheaply accessible, all the others may be visited by those who care to rough it, or who can charter special launches. The yachting of the Channel is excellent, and as the years go by the fame of the region as the greatest fishing ground in the world for the sportsman will increase.

An excellent and thoroughly satisfactory book, beautifully illustrated, upon this subject, is *The Channel Islands,* by Charles Frederick Holder, published by A. C. McClurg & Co., Chicago, and details of trips to Santa Catalina may be had from the Pacific Electric Co., or The Banning Co., Los Angeles, California.

CHAPTER XXIX

THE NATURAL BRIDGE OF VIRGINIA

ONE of the thrilling remembrances of my younger life is of hearing an oration by John B. Gough, the great temperance advocate, who told a story of a young man who was determined to carve his name higher than that of anyone else on the walls of the Natural Bridge of Virginia. How my heart beat faster and faster, and my pulses throbbed harder and harder as the youth cut his way step by step, higher, when he found it impossible to retrace his steps downwards. He *must* climb or fall and be dashed to pieces beneath. As he came nearer to the top, under the spell of the orator's vivid word picture, my own heart almost ceased to beat as I *felt* the strain upon fingers, hands, wrists, shoulders, back, indeed the whole physical frame and its internal organs. The knife blade was nearly worn away, the climber's strength almost gone. He *could not, must not,* fail now, and in an agony of suspense and yet of wild helpfulness of desire, I lifted him up in my own spirit to the place of safety, which, at last, thank God! the orator described.

From that day to this the Natural Bridge of Virginia has had a great claim upon my imagination. And I am free to confess that when I saw it I was thrilled and delighted—more, perhaps, with the memories it echoed than with its own inherent majesty. For I had rambled, in the mean-

time, through the Yosemite Valley, over the High Sierras, the Rockies, the Alps, the Apennines, the Presidential Range; I had explored scores of miles of the Grand Canyon and its tributaries, and had seen the great bridges of Arizona and the Land of the Standing Rocks, the Monument Parks, the Towers of the Rio Virgen and a score and one places of rare majesty and sublimity in the west. True, I had not yet seen the stupendous and colossal bridges of Southern Utah, described in Chapter XVIII, but I had been so saturated with the majestic, the vast, the sublime, the tremendous, that, in comparison, the Natural Bridge of Virginia was but a small feature compared with those with which I had lived off and on for a couple of decades or more.

This world-famed bridge overlooks the James River Valley, being on the western slope of the Blue Ridge Mountains, and near the center of the state, in Rockbridge County, which is in the southern part of the well-known Shenandoah Valley. One of the first extensive accounts of it was Porte Crayon's *Virginia Illustrated,* which appeared in *Harper's Magazine* for August, 1855. In this he gives a description of the bridge, which he visited with his cousins. They had driven the seventeen or eighteen miles from Lexington and were at the Bridge Hotel. One of his lady cousins asked to be taken to see the bridge. Here let me have him tell his own story:

> Porte Crayon sat at one of the windows, to all appearance oblivious of the present. . . . Had he been less abstracted and more considerate, he must have observed the fluttering restless demeanor of his more youthful companions, for cold indeed must be that fancy, and impassive that soul, that can approach this far-famed wonder without emotion.

Courtesy of U. S. Geological Survey

THE NATURAL BRIDGE OF VIRGINIA

"Cousin, is the bridge near at hand?"

Porte started up apologizing for his forgetfulness, and intimated to the ladies that if they would walk with him a short distance they might have a distant glimpse of the bridge without delay. Starting from the tavern door, they followed the public road by a gentle ascent for sixty or eighty paces, when they came to a gate. Here Crayon entered, and taking Minnie by the arm, he pushed aside the branches of an arbor vitæ, and led her forward several paces until they reached a sort of rocky barrier.

"Look down, Cousin!"

She shrieked, and would have fallen but for the support of her companion, who hastily withdrew her from the spot, and seated her, all pale and trembling, under the shade of an evergreen.

"What's the matter? What is it?" inquired the others, with alarmed eagerness.

"Oh, Porte, how could you do it! The bridge! The bridge! We're on the bridge! It was terrible!"

On hearing this Fanny and Dora looked wildly about, as if seeking some place of refuge, and finally fled through the gate by which they had entered, and only halted when they had gained the middle of the highway.

"Come back, you silly creatures!"

"No, no, not for the world! We would not go on it again."

"Don't you know that you are on it now?"

Dora would have taken to her heels again, but Fanny stopped her. "Don't mind Porte's quizzing," said she. "Don't you see that we are in the public road, and not on any bridge?"

Porte succeeded in capturing the runaways, and holding them securely before he gave the information, explained to them that they then stood over the center of the arch, and yet so entirely hidden was the chasm which it spanned, by the natural parapet of rocks and trees, that he had himself seen persons pass over without being aware of it. Then, by dint of fair promises, he induced his captives to return to the point of view.

He then led the ladies, one at a time, to the parapet, where, on their hands and knees they ventured to look over the brink into that awful chasm, which few have nerve sufficient to view

from an upright position. Fanny attempted it, holding to her brother's arm, but found she could endure it only for a moment, when her dizzy brain and trembling knees warned her to desist. Crayon looked long and earnestly into the abyss, bounded by dark impending cliffs of jagged limestone, festooned with rich wreaths of arbor vitæ, the most beautiful of all the tribe of evergreens.

And thus have hundreds of thousands of entranced visitors felt, when they, too, gazed upon this historic bridge. Its associations alone are enough to make it interesting, for King George III granted the original bridge tract to Thomas Jefferson, in 1774, little dreaming, doubtless, of the part the great statesman was to play in the future revolution of his country. After Jefferson became president, he visited the Bridge, surveyed it, and made a map of it and its surroundings, with his own hands. The next year he returned, bringing two slaves, Patrick Henry and wife. For them he built a log cabin. There were two rooms in the structure. He directed that one of these be kept open for the entertainment of strangers. He wrote of it as yet to be "a famous place, that will draw the attention of the world."

George Washington, when a surveyor for Lord Fairfax, visited it, and carved his name upon it, where it may still be seen.

During the Revolution, the French organized two expeditions to visit it. They measured it and made diagrams of it, and from these an engraving was made in Paris, which for nearly half a century was copied both in Europe and America.

Many of the most noted men of America and Europe have visited it, and Marshall called it "God's greatest miracle in stone." Henry Clay wrote of it as "the bridge

not made with hands, that spans a river, carries a highway, and makes two mountains one."

There are several good views that ought to be obtained. One has already been referred to: that of the chasm from the top of the bridge itself. Then from the level of Cedar Creek the whole span may be witnessed without any of the dizzying sensation that many people feel on looking down into a chasm. Following a winding road that descends with rapidity around the point of a small hill, and passing through a grove of trees, one reaches a point above Cedar Creek in the heart of the gorge. It is a wild and rugged spot, the creek noisily running over the rocks in its course, the narrow passageway rendering the shadows blacker and the noise more intense. Now looking back, one sees the bridge in all its beauty. Porte Crayon's description is a good one, and well worthy of preservation. Here it is:

> Above, with its outline of tree and rock cutting sharp against the blue sky, rose the eternal arch, so massive, yet so light, its spring uniting its tremendous buttresses high in mid-air, while beneath its stern shadow the eye can mark, in fair perspective, rocks, trees, hill-tops, and distant sailing clouds. There are few objects in nature which so entirely fill the soul as this bridge in its unique and simple grandeur. In consideration of the perfection of its adaptation to circumstances, the simplicity of its design, the sublimity of its proportions, the spectator experiences a fullness of satisfaction which familiarity only serves to increase; and while that sentiment of awe inseparable from the first impression may be weakened or disappear altogether, wonder and admiration grow with time.
>
> Continuing the descent we reach the banks of the stream, and pass beneath the arch, pausing at every step to feast the eyes upon the varying aspect in which the same is presented. Crossing Cedar Creek under the bridge, we gain a point above on the stream, from whence the view is equally fine with that

first obtained from the descending path on the opposite side. This picture exhibits the turn of the arch to greater advantage. Then the flanking row of embattled cliffs, their sides wreathed with dark foliage and their bases washed by the stream, form a noble addition to the scene.

The average height of these cliffs is about two hundred and fifty feet, the height of the bridge about two hundred and twenty. The span of the arch is ninety-three feet, its average width eighty, and its thickness in the center fifty-five feet. It does not cross the chasm precisely at right angles, but in oblique direction like what engineers call a skew bridge. While the cliffs are perpendicular and in some places overhanging, the abutments under the arch approach until their bases are not more than fifty feet apart. At ordinary times the stream does not occupy more than half this space, although from its traces and water-marks it frequently sweeps through in an unbroken volume, extending from rock to rock. The top of the bridge is covered with a clay soil to the depth of several feet, which nourishes a considerable growth of trees, generally of the evergreen species. These, with masses of rock, serve to form natural parapets along the sides, as if for greater security, and entirely obscure the view of the chasm from the passer.*

A fine view, which sets off the bridge in better proportions than the closer views, is to be obtained from a hillside about half a mile below. The arch here seems to be more perfect, and one sees its relation to the hill, which, a short distance to the right of its apex, is cleft to its base by the chasm spanned by the bridge.

Travelers crossing from the Atlantic to the Pacific, or going from North to South, or *vice versa,* may easily visit the Natural Bridge. It has its own station, conjointly owned by the Chesapeake & Ohio and Norfolk & Western Railways. The drive of three miles between the Bridge

**Harper's Magazine,* August, 1855, p. 306.

and the station is over a well-kept automobile highway, and Thomas Jefferson's one-room of the log house has given place to a thoroughly modern and well-equipped, well-managed hotel, where one may spend a day or a month in visiting the historic scenes in the immediate vicinity.

CHAPTER XXX

THE MAMMOTH CAVE OF KENTUCKY

FOR over a century the Mammoth Cave of Kentucky has been regarded as one of the natural wonders of the world that bears comparison with Niagara Falls, the Grand Canyon, and the Yosemite Valley. Were it all open to the light of day, and free from the mystery of its underground condition it would cease to be as marvelous as it is, only because its mysteries and wonders were lighted up by the sun. To me it is simply a portion of the Grand Canyon region under ground. Almost all its phenomena are revealed in the Grand Canyon region, and given time enough, it is not inconceivable that the Mammoth Cave might develop into a Grand Canyon region of its own.

The geological conditions of this portion of Kentucky must be at least partially understood before one can comprehend the methods by which the Mammoth Cave was formed. And it should here be noted that this is but one of over five hundred known caves in Edmonson County alone.

After the deposition in the primeval ocean of the limestone rock (in which these caves are found) and its covering of what is now called the Chester Sandstone, the whole area, covering over eight thousand square miles was slowly uplifted by the contracting forces of the earth, to

Copyright, H. C. Ganter

ICICLE FORMATION

ENTRANCE TO MAMMOTH CAVE, KENTUCKY

Copyright, H. C. Ganter

STANDING ROCKS, MAMMOTH CAVE

Copyright, H. C. Ganter

PILLARS OF ELEPHANTIS, MAMMOTH CAVE

above the surface of the ocean. The uplift was fairly even and regular, though here and there cracks and fissures doubtless were made, and as the surface appeared higher and higher a certain amount of erosion took place. When the uplift ceased and the reasonably stable equilibrium of the country had been established the forces that made the caverns were able to work with persistency and continuity. As the rain fell it absorbed some of the gases of the atmosphere and these chemical elements cut into the rocks, ate them away, and thus gave the flowing waters the sand, in solution or suspension, to carry away. This added to the carving or cutting powers of the streams that would soon be formed, and, where crevices had been formed by the cracking of the strata during their period of uplift, the streams found a ready course down and into which they eagerly poured. Hence two disintegrating forces were let loose upon the limestone rock in which the caverns are found: the dissolving power of the acids in the water, and the erosive or cutting powers of the sand-charged streams. Some parts of the limestone were less resistant than others. These were soonest eaten away, and as the years, the centuries passed, underground passages were formed into which the rain and flood waters poured from above, thus adding to the cavern-making processes.

These streams wound around, to and fro, and had their network of communicating channels in every direction. Of course, they burrowed deeper and deeper, and thus made underground river passage-ways of different levels. Hence we find today, in the Mammoth Cave, five different levels, on the lowest one of which the Echo River flows in silent, solemn majesty in a darkness as complete as was the world,

before "the fiat went forth from heaven: Let there be light!"

The results of this underground cutting and carving away of the strata was ultimately evident in the caving-in of the surface. This made the surface of the cave region a land of sink-holes, of hills and hollows, of depressions into which the rain and melted snow, etc., emptied, draining the land and leaving few or no exterior streams or rivers. This is the actual condition of Edmonson County today, the only stream of any importance being Green River, which flows pretty deep down through canyon walls of its own carving.

The Mammoth Cave is said to have been discovered over a century ago, by a hunter named Hutchings. He had wounded a bear, and in following it to its lair, the vastness of the cave was revealed to him.

Be this as it may the cave region had gained such a reputation as early as 1806 that Dr. Samuel Brown, of Lexington, made a horseback journey of a thousand miles in order to study it and make a report upon it to the American Philosophical Society, of Philadelphia. He had heard that great deposits of nitrate of potash were found in caves of this county. This, it will be recalled, is one of the chief ingredients in the making of gunpowder. He found the reports correct and assured the learned society that these deposits would be of the utmost value to this country in case it had to go to war with any foreign nation.

In 1811 the Mammoth Cave was purchased by a Mr. McLean, together with two hundred acres of land for the munificent sum of forty dollars. It was soon sold, however, for a keen patriot (?) secured it in order that he might supply the U. S. Government with the nitrates found therein,

for the making of gunpowder used in the war with the British in 1812. He made a fortune by his patriotism.

It was not until 1839, however, that the Mammoth Cave was purchased with the idea of making it a scenic resort. From that day to this it has had an increasing popularity.

On reaching Glasgow Junction, a station on the main line of the Louisville & Nashville Railroad, the quaint-looking cars and engine of the Mammoth Cave Railroad soon transport us to the hotel, some ten miles away. The scenery is rugged and picturesque, rich in varied verdure, and we are prepared before-hand for the charm of setting of the hotel and the entrance to the Cave before we arrive. The hotel itself is an old-fashioned, primitive aggregation of buildings, from the cottages and log-house built by the miners of the nitrates in early days to a modern recently built log-house annex, equipped with porcelain bath-tubs and other modern appliances. The spirit of hospitality pervades the place, and with this we find ourselves richly content.

The very evening of our arrival, after supper, a party was made up to take one of the trips. There are so many ramifications of the Cave that four separate trips are arranged, varying in length and the exertion required, to suit the many needs of the many and varied visitors. I shall not attempt here any elaborate description of each trip, but endeavor to give the reader a clear conception of the Cave as a whole.

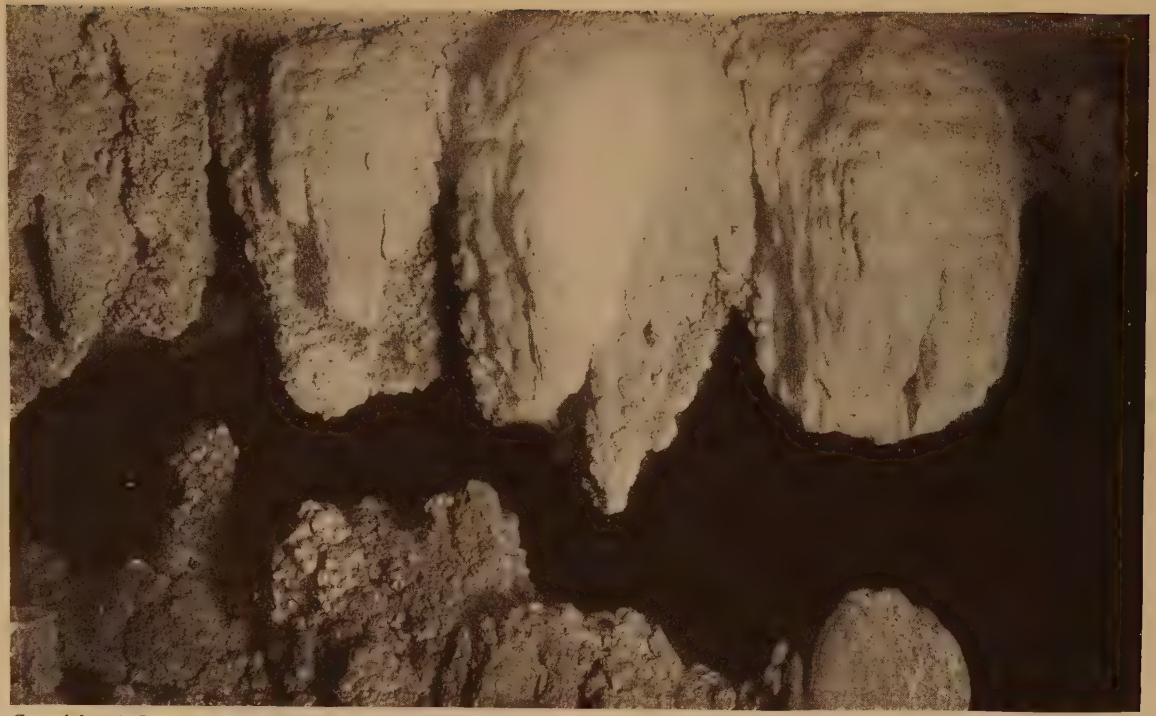
The first impression, as one descends the stone steps into the great arched opening, is of darkness and mystery. But the oil lamps we carry in our hands are a remedy for the former, and the latter we know has been overcome by the hundreds of thousands of visitors, that have rambled through

these underground passages and halls during the past century, so we pluck up courage and press forward.

Some of the earliest objects of interest are those connected with the leaching out of the nitrates — or salt-peter as it is locally called — found in the earth deposits. There are large wooden pipes, — trees augured out — telescoped together, one for leading the water in from the outside, the other for pumping the nitrate-charged water to the outside. There are also several leaching vats, into which the earth was thrown, water poured over it, and as it absorbed the nitrates it flowed into a reservoir beneath from which it was pumped to the outside, there to have the water extracted, and to be shipped for the making of gunpowder, to the peaceable and Quaker-dwelling city of Philadelphia.

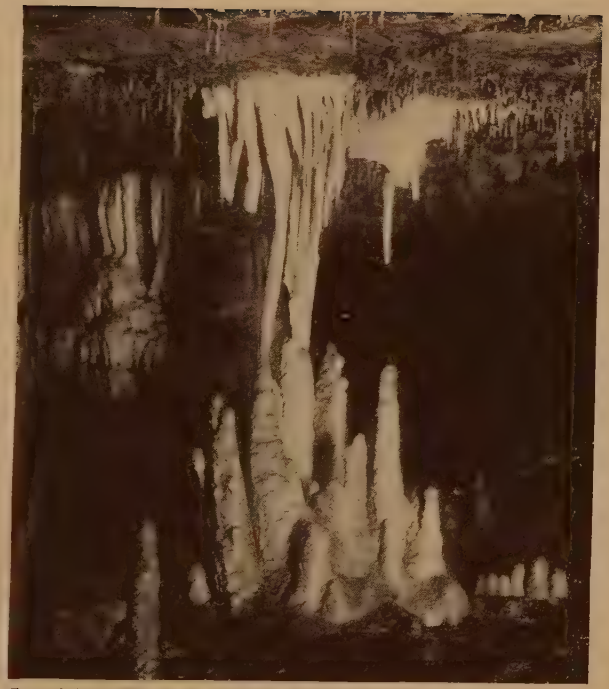
At first the Cave seems to consist of great passageways, varying considerably in width, opening into vast halls or chambers, so high and wide that it requires the burning of magnesium lights to penetrate their mysterious shades. In some of the chambers are galleries, proving that the water that carved out the Cave wore away one level before it descended to the next.

As far as the large chambers are concerned, however, the chief interest centers in those which are today in the active processes of creation. Where water still seeps in from the surface, charged with carbonic acid gas found in the atmosphere, and other chemical agents, it is still eating its way into the solid limestone, as well as wearing away the rock with its never-ceasing, though silent, flow, or monotonous and perpetual drip. Here, sometimes, the passageway upon which one is traveling leads one to the very edge of a deep,



Copyright, H. C. Ganter

ELEPHANTS' HEADS, MAMMOTH CAVE



Copyright, H. C. Ganter

THE THRONE, MAMMOTH CAVE

Copyright, H. C. Ganter

BOTTOMLESS PIT, MAMMOTH CAVE

black and forbidding pit, from which the drip, drip, of water can be heard. Our flickering lamps fail to reveal the depths of the pit, nor, when our guide bids us look up, can we see the crown of the wonderful dome that overhangs it. Here are the primitive forces of world-sculpture at work. Secretly, hidden, in the perpetual gloom and never-ceasing darkness the carving, chiseling and beveling go on. And strange to say, though there seems to be no plan as to what effect shall be produced, no harmony of design as in the works of man, there is a decided harmoniousness of general effect that strikes all who observe. The flowing of the water down the walls gives us groovings and carvings as rare and unique as were ever conceived, and though they suggest, somewhat, the work of the builders of the Gothic cathedrals, there is a rude originality and individuality about it all that differentiates from anything that man has done.

Some of these domes — and there are many of them in the Mammoth Cave — are stupendous in their vast extent, and awesome when they overarch deep black pits which the eye cannot penetrate.

Another striking feature of the Mammoth Cave is the great number of stalactites and stalagmites found. These, as it is well known, are formed by the slow dripping of lime-charged water, which solidifies a minute particle at a time as it passes along. Centuries after centuries these stony icicles of the caves grow underground, extending their length earthwards, while, if the flow of the water be too great, the eternal drip, drip, begins to build up a mound from the floor upwards. And this, age after age, the one striving upwards, the other yearning downwards, like man's

passion and God's blessing, ultimately meet, and stalactite and stalagmite become one, in a wonderful formation of solid and eternal stone.

There are many of these limestone growths in the Mammoth Cave, of peculiar and distinctive forms. Chief among these are the Bridal Altar, where three standing pillars suggest the bride and groom standing before the minister who is to declare them man and wife. The Arm Chair is a peculiarly shaped formation, the rear and side portions of which have joined — stalactite to stalagmite — but the front part of which was arrested before the joining took place. Sometimes this is called the Jenny Lind chair, for here the great singer sat and warbled a few sweet tones, when she visited the Cave in the yesterday of her fame. Olive's Bower contains a number of these interesting growths, and Pompey and Caesar suggest by their rugged strength the physical and mental powers of the great Roman and his foe, while the Elephants' Heads are as massive and rough as though they were the actual heads severed from their bodies and changed into perpetual stone.

If one were to follow his fancies he might write many pages upon the quaint, fantastic, strange, and often beautiful, forms assumed by these limestone conceptions.

But of far greater beauty, though less frequently found in the best known portions of the Cave, are the multitude of gypsum forms that appear upon the walls and ceilings in many far-away passages. These generally assume the shape of flowers, either complete or in the process of formation. As a rule they are creamy white, with occasionally a smoky tinge caused, doubtless, by a small amount of manganese in the chemicals held in solution when the flowing

water was forming them. Take any one of these Cave Flowers and examine its queer petals and it will give you a good idea of all the rest. As Dr. Hovey has well written:

> Each rosette is made up of countless fibrous crystals; each tiny crystal is in itself a study; each fascicle of carved prisms is wonderful, and the whole glorious blossom is a miracle of beauty. Now multiply this mimic blossom from one to a myriad as you move down the dazzling vista as if in a dream of Elysium, not for a few yards, but for two magnificent miles. All is virgin white, except here and there a patch of gray limestone, or a spot bronzed by metallic stain, or as we purposely vary the lovely monotony by burning chemical lights we admire the effective grouping done by Nature's skilful fingers. Here is a great cross made by a mass of stone rosettes; while floral coronets, clusters, wreaths, and garlands embellish nearly every foot of the ceiling and walls. The overgrown ornaments actually crowd each other till they fall on the floor and make the pathway sparkle with crushed and trodden jewels.*

Perhaps, however, to most people, the ride on the river at the lowest level of the cave, is the great treat of all. During ordinary height it flows silently, serenely and calmly, but when the rainy and flood seasons come it rises and becomes a rapid, roaring, mighty torrent. Great boats, capable of taking thirty or more passengers in security, are chained to the walls, and from an extemporized landing we take our places, the chain is released, and propelling us by pushing with his "torch throw-stick," the guide steers us along through the mysterious and winding waterway. Then he asks for silence, and in a quiet, soft tone, sings the notes of the common chord for two octaves. The results are startling. Instead of an ordinary echo, the notes are all

* *The Mammoth Cave of Kentucky,* by H. C. Hovey. John P. Morton & Co., Louisville, Ky.

blended together in a rich, sweet, mellow harmony that reverberates for several minutes. The firing of a revolver sounds like a thousand siege guns following one another; the splashing of the paddle upon the water, or striking the side of the boat give forth startling and long-continuing sounds.

In this river, and in the pools that each rise leaves in the sands, are to be found the strange eyeless crawfish, and the blind fish which sometimes reach the size of five inches long, known to the scientists as *Amblyopsis Speloeus,* meaning "a weak-eyed cave dweller." There are other strange creatures such as crickets, beetles, flies, fleas, spiders, and, of course, thousands of bats, which latter come hither to hibernate during the winter months.

In spite of these fascinating features of the Cave, there was one other phase that interested me more than the others. That was: How much of this vast underground world is yet unexplored? From conversation held with the guides and others, and a study of the literature of the Cave I came to the conclusion that here was still field for one who desired to gaze upon scenes that as yet the eye of man had never fallen upon. Consequently I arranged for the privilege of taking a special guide and going with him wherever he was willing to take me. His name was Ishmael Schuyler Hunt and he had had fifteen years' experience. After seeing the ordinary sights we entered a level into which not one in a thousand of the Cave visitors are ever taken. After going as far as he and one of the other guides had ever gone, he proposed that we continue on and explore. This was what I desired, so we climbed down a sloping kind of rude shaft to a lower level, and then over, under, and

around rocks, up and down, for a mile or so, passing places where literally millions of tons of floral-like gypsum deposits were to be found on ceilings and walls, or fallen to the cave floor, there to be trampled under foot whenever the exploring man came along.

After passing through a very narrow place we came to where the upper and lower walls were not more than three feet apart. To pass between these meant crawling, hardly on hands and knees, but on our bellies. Hunt was ahead. The passage opened out. We had easy walking for awhile, then it closed up again. Going first, Hunt proceeded carefully until the merest glimmer from his lamp reached me, when he called and said he had reached the edge of a pit, the bottom of which he could not see, but that he thought he could "coon" around it, on a narrow shelf which extended as far as he could see around the left side. Telling him to go on carefully, I followed. When I reached the pit, he was safe on the other side, and I imitated the "coon" in hanging on by my teeth and toe-nails to the sloping and sand-covered shelf, with the ticklish sensation ever present that did anything give way I should slip, slide, fall into that black profound which had a very real personality on my right hand. Beyond this pit we came to a rather expansive grotto, where millions of brownish calcareous deposits of a peculiar marble, flower and cauliflower-like form, depended from the ceiling, and a striking mass of conjoined stalactites and stalagmites stood forth boldly as the striking feature of the opening. There were also many of the flower-like gypsum deposits, so, at the suggestion of the guide, I called this the Pasadena Floral Grotto, in honor of my home city in California. Some day I hope to send a tablet that will re-

main forever as a reminder of the first recorded trip made to this far-away hidden spot in the bowels of the earth.

It should be noted that while the guide was perfectly sure we were in unexplored territory, we had not gone far before we came upon the footprints of a man who had been there ahead of us. In this quiet and windless space, where no rain falls, or winds blow, nor rivers rise, such footprints would remain for centuries. Whose were these? No one knows! Possibly of some adventurous guide long since dead, for Hunt assures me that no one living today has any knowledge of anyone ever having been into this portion of the Cave.

Hence even to the explorer the Mammoth Cave has a message, and to the curious, the student of Nature, the patriotic American who desires to see and know his own land it calls with peculiar force and power, as one of the Greatest Natural Wonders of the World.

CHAPTER XXXI

INCOMPARABLE NIAGARA

WHO that has seen Niagara once can ever forget it? What other scene of waterfall, canyon, forest, mountain, glacier, city, ocean, or desert can obliterate it? With Charles Dickens we are compelled to cry: "Niagara was at once stamped upon my heart, an image of beauty; to remain there, changeless and indelible, until its pulses ceased to beat, forever."

Is there any wonder that when Father Hennepin — the first white man to write a description of it — saw it in 1678 in company with the unfortunate and adventurous LaSalle, he thus expressed himself:

> Here is a vast and prodigious Cadence of Water which falls down after a surprising and astonishing manner, insomuch that the Universe does not afford its Parallel. The Falls seem to me to be above six hundred feet high, and the Waters, which fall from this horrible Precipice, do foam and boyl after the most hideous manner imaginable, making an outrageous Noise, more terrible than that of Thunder, for when Wind blows out of the South, their dismal roaring may be heard more than Fifteen Leagues off.*

And it is all very well to laugh at this exuberant description and ridicule its exaggerations. Were we to come upon Niagara, unprepared, as did Father Hennepin, and all its

* *A New Discovery of a Vast Country in America,* by Louis Hennepin, 1698.

awful majesty, and vast sublimity were dashed in our faces, as it were, without a moment's mental preparation, I question whether the most careful, or most blasé would be able to write any description more vivid, or, in the main, more truthful.

It is really astonishing how the thought of Niagara has taken hold of the imagination of people of diverse mental and emotional characteristics. For instance, on one of my returns to my native town in England, one gentleman, a grocer by trade, fairly hurled the question at me the moment I saw him: "Have you seen Nye-a-hag-a-ra?" for that was the way he pronounced it. And when I replied in the affirmative, he cared to hear nothing of where I had been, or what else I had seen until I had filled him full, and satisfied all his questionings about the great cataract. I mention this merely as one of a score of similar experiences.

Tyndall, the calm, serene scientist, was a devoted admirer of Niagara. He said: "Fine and close acquaintanceship, the gradual interweaving of mind and nature, must powerfully influence any final estimate of the scene." And this is true. One's first impressions of Niagara are absorbing for the time being, but they grow and change materially as one gains closer acquaintance with it. Nor can one get in one view a full conception of what Niagara is. I have visited it again and again, in the course of thirty years, yet, as I wander around from place to place, I get new views, new effects, new impressions at every visit.

The first point from which the visitor generally sees Niagara on the American side is Prospect Point. Here at an elevation slightly above the Falls one's view to the left is of the river, rushing madly towards the verge of the

THE AMERICAN FALL

THE HORSESHOE FALL

WHIRLPOOL RAPIDS

PROSPECT PARK IN WINTER

precipice, where it makes its wonderful leap, roaring and thunder-voiced into the abyss beneath. From Prospect Park one may descend by the Inclined Railway to the foot of the Falls, where most startling and amazing effects are to be witnessed. One will need an umbrella and waterproof coat.

It is from Goat Island, however, that the real conception of Niagara is obtained. In walking over the bridges, and in glimpses through the rich growth of trees that crowns the island, one realizes, as nowhere else, the marvelous rush of the upper rapids. By many these are regarded as the supreme object of attention. The Duke of Argyle wrote of them:

> When we stand at any point near the edge of the Falls, and look up the course of the stream, the foaming waters of the rapids constitute the sky line. No indication of land is visible — nothing to express the fact that we are looking at a river. The crests of the breakers, the leaping and the rushing of the waters, are seen against the clouds as they are seen in the ocean, when the ship from which we look is in the trough of the sea. It is impossible to resist the effect of the imagination. It is as if the fountains of the great deep were being broken up, and that a new deluge were coming on the world. The impression is rather increased than diminished by the perspective of the low wooded banks on either shore, running down to a vanishing point and seeming to be lost in the advancing waters. An apparently shoreless sea tumbling toward one is a very grand and a very awful sight. Forgetting, then, what one knows, and giving oneself to what one only sees, I do not know that there is anything in Nature more majestic than the view of the rapids above the falls of Niagara.*

All agree that the surpassing views of the Falls are to be had from the Canadian side. It was on Table Rock,

* *Geology and Paleontology of Niagara Falls and Vicinity,* by A. W. Grabau. N. Y. State Educat. Dept., Albany, 1901.

near the edge of Horse Shoe Falls, that Dickens got his impressions. Again, to quote him:

> It was not until I came upon Table Rock, and looked — great heaven, on what a fall of bright-green water! — that it came upon me in its full might and majesty. Then, when I felt how near to my Creator I was standing, the first effect, and the enduring one — instant and lasting — of the tremendous spectacle, was peace. Peace of mind, tranquility, calm recollections of the dead, great thoughts of eternal rest and happiness: nothing of gloom or terror. . . .
>
> Oh, how the strife and trouble of daily life receded from my view, and lessened in the distance, during the ten memorable days we passed on that enchanted ground! What voices spoke from out the thundering water; what faces, faded from the earth, looked out upon me from its gleaming depths; what heavenly promise glistened in those angel's tears, the drops of many hues, that showered around, and twined themselves about the gorgeous arches which the changing rainbows made.*

Contrary to his general custom Dickens, in the above quotation, fails to explain why that blessed sense of peace possessed him as he gazed upon the overflowing water. John Muir, it seems to me, fully answers, or explains, this in one of his keenly analytical comments on the Fall of Tueeulala, in the Hetch Hetchy Valley. He says:

> Lowlanders are apt to suppose that mountain streams in their wild career over cliffs lose control of themselves and tumble in a noisy chaos of mist and spray. On the contrary, on no part of their travels are they more harmonious and self-controlled.†

That this is true I have observed again and again, and have called the attention of thoughtful travelers to the fact,

* *American Notes.*

† *The Yosemite,* by John Muir, pp. 250-1, The Century Co., New York.

yet few, if any, had ever noticed it before. The personality of falls is as wonderfully varied as is that of individuals, and there are types, too, of falls, as there are of faces and characters. For instance, the water falling over the Niagara cliffs, in the smooth volume it possesses, is an entirely different-appearing element from the water that makes Bridal Veil Falls, or Mooney Falls, described in another chapter, or of any of the falls in the Yosemite or Yellowstone. This is too large a subject to discuss here, but it will prove interesting to the intelligent observer to be on the lookout, in future, to see if the statement be not an accurate one.

Table Rock has changed, somewhat, since Dickens' day. In 1850 a huge portion of it fell off into the gorge, but enough is still left to give one incomparable and awe-inspiring views, though he is liable to be drenched with spray at any turn of the wind.

One of the effects that most people notice is the vivid green of the water of these Falls. Tyndall thus comments upon it:

> While the water of the falls as a whole bends solidly over and falls in a continuous layer . . . close to the ledge over which the water rolls, foam is generated, the light falling upon which, and flashing back from it, is sifted in its passage to and fro, and changed from white to emerald green.*

There are two things every Niagara visitor should not fail to do. These are to take the ride on *The Maid of the Mist* to the foot of the Falls, and then take the *Belt Line* ride down the river to see Whirlpool Rapids. This latter ride may be taken beginning at either the Canadian or American side, and affords one reasonably good views of all the

* *Fragments of Science,* by John Tyndall. D. Appleton & Co., 2 vols.

most interesting spots. Yet, if one would really study the Falls, the rapids, and their geological surroundings, he must leisurely walk rather than ride.

The *Maid of the Mist* ride is perfectly safe, having been enjoyed by many thousands of people without accident. The little steamer rides, tossing like a cork, almost to the foot of the Falls, and thus brings one near to the vast sheets of marvelously friction-embroidered tapestry of the falling water, made iridescent in the sun's rays. Especially in winter time are some wonderfully fine effects observable.

On the *Belt* ride, after passing Clifton, on the Canadian side, one begins to have fine views of the Whirlpool Rapids, and can realize something of their wild and threatening character. In 1861, with three men on board, the *Maid of the Mist* successfully navigated these rapids and the Whirlpool below, in the presence of a vast throng of highly interested spectators. But the feat was never again attempted. And it was through this same stretch of demoniac water that Captain Webb, the hardy and daring swimmer, attempted to swim, paying for the foolhardy venture with his life. The Whirlpool is at the end of the Rapids, and our views are many and varied, until the Whirlpool Station of the electric road is reached. Here, from a little shelter built on an extreme point, one obtains excellent views of the gorge, including the Whirlpool, and the Rapids above and below. This great swollen elbow is certainly the most thrilling portion of the entire gorge. The whole body of the river rushes into the pool from the southeast with great velocity. Held within narrow confining walls, which have been rendered circular by the water's own cutting power, the current becomes fierce through restraint. Leaping and

tearing at the circular wall, it madly rages and yet rushes on, impelled and propelled by the inrushing force of the ever oncoming river. It circles completely around, finally escaping by *passing under* the incoming torrent, through the comparatively narrow outlet, in a northeasterly direction. It is estimated that the water here is not less than 150 to 200 feet deep, but both the outlet and inlet are shallow, and are formed of a very hard quartzose bed of what is known as the Medina formation. Whether one is interested in geology or not he should not fail to notice the succession of the rock strata finely exposed here on the New York side of the river.

A little below the Whirlpool, Niagara Glen is reached. Few visit it, yet I have found it one of the most attractive spots along the gorge. To quote A. W. Grabau again:

> It marks the site of a former fall, and, besides its interest on that account deserves to be visited for its sylvan beauty and its wild and picturesque scenery of frowning cliffs, huge moss-covered boulders and dark cool dells, where rare flowers and ferns are among the attractions which delight the naturalist. Many good views of the river and the opposite banks may here be obtained, and the student of geology will find no end to instructive features eloquent of the time when the falling waters were dashed into spray on the boulders among which he now wanders.*

There are also excellent views at Queenston Heights and very comprehensive ones from the summit of Brock's Monument.

On the return journey, on the New York side, the cars run close to the rushing waters of the river, thus making the trip of unusual interest. The history of the various places

* *Geology and Paleontology of Niagara Falls and Vicinity.*

at which the regular stops are made is full of interest, as, for instance, at the Bloody Run Ravine, where, in 1763, the Seneca Indians drove a band of English soldiers, with their wagons and horses, over the cliff, and they were dashed to pieces upon the rocks below.

But by far the most attractive place at which to stop is the Whirlpool Rapids. The water which here rushes through a narrow and comparatively shallow channel, makes a descent of nearly fifty feet in the space of less than a mile, and its turbulence and magnificence are indescribable. Seen at night by moonlight, or when illuminated by the light from a strong reflector, the spectacle is beyond portrayal.*

To the visitor, whether he be widely traveled or not, Niagara makes a definite, direct, and distinctive appeal. No one can be disappointed in it, if he merely stops long enough and takes the trouble to see it from every reasonable viewpoint, while to the student of geology it affords problems of extreme interest to the borders of fascination, upon which some of the greatest scientists of this and past ages have expended their mental energy.

* *Geology and Paleontology of Niagara Falls and Vicinity.*

INDEX

INDEX

Acoma, 24, 95, 199; by the Enchanted Mesa to, 101-114
Acowitz Canyon, cliff dwellings, 61
Adventures in Zuni, My, 141
Agua Fria Crater, 138
Alamo, 200
American Archeology, School of, 21, 71
American Highways and Byways of the Rocky Mountains, 190
Apache trail to Roosevelt Dam, over the, 150-157
Argyle, Duke of, and Niagara, 285
Arizona, deserts, lure of the, 172-181; Franciscan missions of, New Mexico, and Texas, 196-202; Grand Canyon of, 1-10
Arizona Sketches, 147
Augusta Bridge, Utah, 185

Bandelier, Adolf, and the Delight Makers, 25, 67
Beadle, J. H., and Canyon de Chelly, 85, 86
Beaver Creek, Verde region ruins, 31
Beaver Falls, Havasu, 165
Betatakin, 20, 38; to, and Kitsiel, 38-59
Big Basin, California Redwood Park, 243
Big trees of California, 241-248
Blackfoot Glacier, 218
Blue-water, or Cataract Canyon, 36
Bridal Veil Falls, Cataract Canyon, 164
Bridge, Natural, of Virginia, 265-271
Bridges, Colossal, of Utah, 182-189
Brown, Samuel, and Mammoth Cave, 273

Calaveras grove of big trees, 242, 246, 247
California State Redwood Park, 243, 245
California the Wonderful, 236, 247
Canyon, Grand of Arizona, 1-10
Canyon de Chelly, del Muerto, and Monument, and their ruins, 76-86
Canyon Diablo, 145
Canyon of Cataracts, and the Havasupai Indians, 158-166
Carleton, General, explores Canyon de Chelly, 83, 91
Caroline Bridge, Utah, 184
Casa Grande, cliff-dwellings, 25-27
Cascade Range, 227
Cataract Canyon, 36, 158
Cave, Mammoth, of Kentucky, 272, 282
Chaco Canyon, cliff-dwellings, 21
Chalcedony Park, Petrified Forest, 168
Channel Islands of California, 259-264
Chapin, F. H., and the cliff-dwellings, 61-63
Chelly, Canyon de, 20, 22, 41, 76-86
Chittenden, General H. M., and the Yellowstone, 205
"Cibola, Seven Cities of" (Zuni), over the Lava Fields to the, 136-144
"City of the Sky" (Acoma), 101-114
Cliff- and Cave-Dwellings of the Southwest, the Prehistoric, 20-37
Cliff-Dwellers country, boundaries of, 20
Cliff-Dwellers, The Land of the, 61, 63
Cliff-Dwellings of the Mesa Verde, 60-66
Cliff-Dwellings of the Mesa Verde, The, 62
Cliff Palace, 61, 62

Colorado, ruins of the Little, 20, 36
Colorado Springs, 190
Colossal Natural Bridges of Utah, 182-189
Concepcion, la, Purissima de Acuna, mission, 201
Conquistadores, 74, 104, 136, 197
Continental divide, 205
Corn dance, 99
Cowlitz Glacier, 224
Crater Lake, Oregon, 227-233
Crayon, Porte, and the great Natural Bridge, 3, 266-270
Crookes, William, and Meteorite Mountain, 148
Crucifixion of Penitentes, 12
Cummings, Byron, and the Utah Natural Bridges, 38, 182, 185
Cushing, F. H., and Zuni, 25, 141, 158

Delight Makers, The, 67
Delight Makers, Old Santa Fe, and the land of the, 67-75
Dellenbaugh, F. S., and the Grand Canyon, 9
Delmas, D. M., and the big trees, 244
Del Muerto Canyon, 76-86
Desert, the lure of the Arizona, 172-181; color, vastness, and calm, 172-176
Diablo Canyon, 145
Dickens, Charles, and Niagara, 283, 286
Doniphan's Expedition, 43, 77, 90
Dutton, Clarence E., and the Grand Canyon, 6

Echo River, Mammoth Cave, 273
El Capitan, Yosemite, 2, 236, 237
Ellen Wilson Lake, Glacier Park, 219
El Tovar, Grand Canyon, 7, 8, 166
Enchanted Mesa, by the, to the "City of the Sky," 101-114

Fewkes, J. W., and the cliff-dwellings, 25, 27, 29, 36, 38; and the Hopi snake dance, 124-126
Fiesta de los Muertos, la, 97
Fire Dance of the Navahos, 87-94
Firehole Geyser Basin, 204
Fishing at Santa Catalina Island, 262
Flagellantes, Old Taos and the, 11-19
Flagstaff, ruins near, 20, 35
Flute of the Gods, The, 100
Fossil Forests of Arizona, 167-171
Franciscan Missions, old, of New Mexico, Arizona, and Texas, 196-202
Fremont group of big trees, 242
Fresno grove of big trees, 242

Garden of the Gods, and Monument Park, 190-195
Garland, Hamlin, and the Hopi snake dance, 129-135
Geyser Basin, 204
Geysers of the Yellowstone, 205-210
Gila Valley cliff-dwellings, 20, 25
Gilbert, G. K., and Meteorite Mountain, 147
Glacier National Park, 214-220
Glaciers of the National Park, 223
Grabau, A. W., and Niagara Falls, 285, 289, 290
Grand Canyon of Arizona, 1-10, 159
Grand Canyon of the Yellowstone, 2, 205-213
Grand County, Utah, and the Natural Bridges, 188

Havasupai Indians, Canyon of Cataracts and the, 158-166
Hayden's Geological Survey, 60, 204
Hodge, F. W., and the Enchanted Mesa, 25, 104
Holder, C. F., and the Channel Islands, 259
Hopi Cliff Ruins, 20, 25, 36
Hopiland, 24, 25, 76, 95
Hopi Snake Dance, 115-135
Hornaday, W. T., and glaciers of National Park, 218, 219
Hovey, H. C., and gypsum flowers of Mammoth Cave, 279
Hughes, J. T., and Canyon de Chelly, 43, 77

Indians of the Painted Desert Region, The, 123

Indians of the Terraced Houses, 19, 100
Inscription Rock, 140
"Island of Summer, The," Catalina Island, 259
Isleta, New Mexico, 95, 96

Jackson, Mt., Glacier National Park, 214
Jenney, C. E., and the big trees, 241
Johnson, Clifton, and the Garden of the Gods, 190

Kachina Bridge, Utah, 184
Katzimo, the Enchanted Mesa, 102
Kayenta, in Hopiland, 39-45
Kearny, General S. W., and Navajo land, 14, 22, 77, 89
Kentucky, Mammoth Cave of, 272-282
Khiva, A Ride to, 38
Kitsiel, cliff-dwellings, 20, 38-59

Laguna, important pueblo, 98, 101, 136
Lake, McDermott, 214; Ellen Wilson, 219; Gunsight, 219; McDonald, 216; Mirror, 238; Tahoe, 249-258; Two Medicine, 217
Land of the Cliff-Dwellers, The, 61
Land of Poco Tiempo, The, 12, 100, 157
Land of the Standing Rocks, The, 190
Land of Sunshine, 34
Langford, N. P., and Yellowstone geysers, 209, 210
La Plata Range, 50
Lava Fields, over the, to the "Seven Cities of Cibola," 136-144
Le Conte, John, and Lake Tahoe, 258
Le Conte, Joseph, and Crater Lake, 228
Libbey, W., and Katzimo, 103
Lithodendron Valley, Petrified Forest, 168
Little Bridge, Utah, 185
Little Colorado River ruins, 20, 36
Long, Horace J., and the Natural Bridges of Utah, 183, 184
Lummis, C. F., and the Penitentes, 12; and the Enchanted Mesa, 102, 104; and the Apache War, 157
Lure of the Arizona Deserts, 172-181

Mammoth Cave of Kentucky, 272-282
Mancos, Mancos Canyon, and cliff-dwellings, 41, 61
Mariposa grove of big trees, 238, 242
Markham, Edwin, and the Yosemite, 236, 237; and the big trees, 247
Matthews, Washington, and the Navajos, 25, 137
McCully, A. W., and Rainier National Park, 224-226
McDermott Lake, 214
McElmo, cliff-dwellings, 41
Merced grove of big trees, 246
Mesa Verde, Cliff-dwellings, of the, 21, 41, 60-66
Meteorite Mountain and Sunset Crater, 145-149
Miller, Joaquin, and the desert, 177
Mindeleffs, the, and Indian remains, 25, 26, 29, 83
Montezuma Castle, Well, and Creek, cliff-dwellings, 31, 41
Monument Canyon and its ruins, 76-86
Monument Park, The Garden of the Gods and, 190-195
Mossbræ Falls, Sacramento River, 162
Mountain Chant of the Navajos, 92
Mountain that was God, The, 226
Muertos, la Fiesta de Los, 97
Muir, John, and the Grand Canyon, 1; and the Petrified Forest, 168; and the Yosemite Valley, 234; Muir Woods of big trees, 245
Munk, J. A., and Meteorite Mountain, 146

Natural Bridge of Virginia, 3, 265-271
Natural Bridges of Utah, 41, 182-189

Navajo, legend, 137; Mountain, 186; National Monument, 20, 38
Navajos, 22, 25, 28, 40, 53, 76, 83, 87; and their remarkable fire dance, 87-94
New Mexico, old Franciscan missions of, 196-202
Niagara, 283-290
Nisqually Glacier, 221-223; River, 222
Nonnezoshie Bridge, Utah, 186
Nordenskiöld, Gustav, and the Cliff-Palace, 62

Old Franciscan Missions of New Mexico, Arizona, and Texas, 196-202
Old Taos and the Flagellantes, 11-19
Oskison, J. W., and cliff-dwellings, 38, 46
Owachomo Bridge, 185

Painted Desert, over the, to the Hopi snake dance, 115-135
Pajarito Plateau, cliff-dwellings, and Delight Makers, 20, 67
Paradise Valley, Rainier National Park, 224
Pattie, J. O., and Santa Fe region, 22
Penitente Brothers, 12-19
Petrified Forest of Arizona, 167-171
Pike's Peak, 190
Pikyabo Bridge, Utah, 189
Porte Crayon, and Natural Bridge of Virginia, 3, 266-270
Powell, J. W., and the Grand Canyon, 7; and the cliff-dwellings, 23, 25
Pueblo Rebellion of 1680, 11, 74, 112, 199
Pueblos, 23, 24

Rain ceremony and the snake dance, 135
Rainier National Park, 214, 221-226
Red Rock country ruins, 20
Rio Grande, pueblos, 23; terraced houses of the, 95-100
Rito de los Frijoles, cliff-dwellings, 69-71
Roof of the continent, on the, Montana, 214-220
Roosevelt Dam, 150-157
Ryan, Marah Ellis, and Indians and their pueblos, 100

Salt River cliff-dwellings, 20, 25, 151
San Antonio de Bexar, mission, 301; de Valero, old mission, 200; Fernando, 201; Fernando de Taos, 11; Francisco de la Espada, 201; Gabriel, 199; Ildefonso, 74, 100; Jacinto, 200; de Tumacacori, 202; Juan, 100; Xavier del Bac, 201
San Estaban's day at Acoma, 109
San Francisco Mountains, cliff-dwellings, 20, 35
San Juan River, cliff-dwellings, 21
San Mateo Mountain, lava flow and legend, 137, 138
Santa Catalina Island, 260
Santa Fe, 21, 73, 199
Saunders, C. F., and the Rio Grande, 19
Sempervirens, big trees, 241-248
Sequoias, big trees, 241-248
"Seven Cities of Cibola," 136-144
Shipapu Bridge, Utah, 185
Sia, The, 100
Simpson, J. H., and Canyon de Chelly, 78-83; *Report of an Expedition into the Navaho Country,* 78-83
Smith, Katharine Louise, and Two Medicine Lake, 217
Snake ceremonies at Walpi, 115-135
Sperry Glacier, 218
St. Michaels, mission, 41
Sunset Peak, crater, 149

Tahoe, Lake, 249-258
Tahoma, "the mountain that was God," 221
Taos, 11, 69, 95; and the Flagellantes, 11-19
Terraced houses of the Rio Grande, 95-100
Texas, old Franciscan missions of, 196-202
Thompson, David, and the Yellowstone, 203

Topocobya trail, Cataract Canyon, 159
Trees, the big, of California, 241-248
Truckee River, Lake Tahoe, 251
Tsotsil, Mt., sacred to Navahos, 137
Tumacacori, San Jose de, mission, 202
Tuna Club, 262
Tuolumne grove of big trees, 246
Tusayan, Hopiland, 20, 24, 25
Twain, Mark, and Lake Tahoe, 256
Two Medicine Lake, 217
Tyndall, John, and Niagara, 287
Tyuonyi, cliff-dwelling, 69

Undeveloped West, The, or Five Years in the Territories, 86
Utah, Colossal Bridges of, 182-189
Utah, the Great Natural Bridges of, 189

Verde, Camp, cliff-dwellings, 29, 31; River, and Valley ruins, 20, 28-37
Verde, Mesa, the Cliff-Dwellings of the, 60-66
Virginia, Natural Bridge of, 265-271

Wallapai trail into Cataract Canyon, 159
Washington, Mt., 227
Water Tank Bridge, Utah, 189
Wetherills and Colville, 38, 39, 41, 52, 61
Whirlpool Rapids, Niagara, 287, 288

Yellowstone Grand Canyon, 2
Yellowstone Park, 203-213
Yosemite Valley, 2, 234-240

Zuni, 21, 25, 36, 95, 136-144, 158, 199; trail to Cataract Canyon, 159

F595.J26
Our American wonderlands
WITHDRAWN
3 0629 0073268 3

F
595
J26